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Development of settlement in the Northern Iraq since Hassuna till Ninevite 5 period (6500-2600 BC)

Praca doktorska napisana pod kierunkiem
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Contents:

Chapter 1: Introduction

Research goal of the dissertation

The main aim of this dissertation is to check how various aspects of human activity are reflected in the settlement patterns in the area of northern Iraq. I would like to investigate continuity and changes that occurred in prehistoric settlement patterns in this region. The study of the settlement of northern Iraq will be set within the context of developments of certain periods. Attention will be paid to economic, social, and ideological spheres of human activity as the main factors shaping the settlement. The settlement patterns of the neighboring areas (surveyed so far) will be compared to each other. Various regions could develop differently during the same period and thus represent different settlement dynamics. The area of the Upper Greater Zab Archaeological Reconnaissance (UGZAR) is the main case study because the project has finished and the processing of data is almost complete. The data from the North Jazira Survey (1986–1990) undertaken by Wilkinson and Tucker around Tell al-Hawa and from Ibrahim's investigations in north-western Iraq (1978–1979), as well as the recent results of the surveys of the Erbil Plain Archaeological Survey (EPAS), Eastern Habur Archaeological Survey (EHAS), and Land of Nineveh Archaeological Project (LoNAP) will be investigated as well. The surveys around Tell Hamoukar and Tell Leilan will also be referenced since these areas are geographically and culturally related to the above-mentioned regions.

Due to the limited data and the almost total absence of previous investigations, the results should be regarded as initial interpretations which can be used as a basis for further studies and for comparisons with other regions.

Chronological scope

The dissertation covers four millennia, from the Hassuna period (the first pottery Neolithic culture in the area, ca. 6500 BC) till the Ninevite 5 period (first half of the 3rd millennium BC). During this time, a number of substantial changes occurred in the Near East in the social, economic, and religious spheres. All of these periods, from Hassuna (a

Late Neolithic period) till the end of Ninevite 5 (Early Bronze Age) can be considered prehistory (Schwartz 1987: 94).

Geographical scope

The area of northern Iraq is geographically diverse. It consists of plains, undulating areas, and high mountains. These various regions are being investigated by surveys conducted in the territory of Iraqi Kurdistan, and in the past, two important surveys in northern Iraq were undertaken by Ibrahim and also by Wilkinson and Tucker. The dissertation also refers to the area of Syrian Jazira located just to the west of the Iraq–Syria border.

The UGZAR area encompasses the middle basin of the Greater Zab river. The western border is artificial and runs along the 43°40' E meridian. The southern part of the area is bordered by the Bastora river (intermittent) and partly by the Greater Zab river. The northern and north-eastern border extends along the peaks of the Harir, Prt, and Akre ranges. The south-eastern border cuts the Safin massif ca. 12 km to the south-east of Shaqlawah and runs further to Gomaspan where it joins the Bastora river. The whole area covers ca. 3040 km^2.

The area covered by the UGZAR project survey is of a very diverse character. There are four examples of a quite flat terrain: the eastern part of the Navkur plain along the Karabak and the Gunapak streams, the Harir plain along the Harash stream, an area along the northern bank of the Bastora, and a small plain of Grdapan to the south of the Bardarash mountains. The plains are cut by numerous streams, most of which are now seasonal. Nowadays, these four areas are densely covered with cultivated fields. The rest of the UGZAR region is more or less hilly, especially in the northern (the Akre plateau, stretching from the south-western areas of Akre to the Greater Zab), central (the Sart mountains), southern (the Bardarash mountains), and south-eastern (the Pirmam mountains, the Safin massif, and the Babacisk mountains) parts. These mountains and hills form the foothills of the Zagros mountains. The Pirmam, Babacisk, Safin, Miraua, Zrdkan, Qala Qasr, and Harir ranges are parallel to each other and are separated by valleys of perennial streams: Kore, Mauran, Qadiana, and Harash. The slopes of the mountains and hills are now quite bare; some are overgrown with grass or sparsely covered with trees. In the case of these hilly areas, agriculture occurs mainly in the river valleys.

The western part of the Navkur plain is currently surveyed by the Land of Nineveh Archaeological Project (LoNAP). This part of the plain is watered by the Xazir, Gomel, and Nardush rivers. From the south, the plain is closed by Jabal Basiqa, Jabal Maqlub, and the Bardarash mountains. The project covers also the plains to the south of Jebel Al-Qosh (up to Jebel Kand), which are cut by numerous streams running from north to south, and the plain around Dohuk and Semel, between the Tigris and Jebel Zawa with the Dohuk stream flowing through the area, as well as mountainous areas to the north of the Navkur plain, Jebel Al-Qosh, and Jebel Zawa (Morandi Bonacossi 2017). The plains of the piedmont belt are nowadays covered with numerous agricultural fields.

The area further to the north-west is being surveyed by the Eastern Habur Archaeological Survey (EHAS) project. This region consists of a belt of slightly undulating plains between the Tigris and Jebel al-Abyad (also called Sax-e Bixer) and the mountainous regions to the north from Jebel al-Abyad. The Eastern Habur river is one of the main eastern tributaries of the Tigris. The river flows from east to west, between the Amedi and Kishan mountains to the north and the Gara, Mangesh, Kalash, and Abyad mountains to the south, and together with smaller tributaries, it forms a wide and hilly inter-mountainous basin called the Sindaya plain. Further west, the Eastern Habur crosses the Zaxo/Silopi plain and joins the Tigris (Pfälzner, Sconzo, Puljiz 2015).

The area located to the west and south-west from the Tigris river has been covered by three recent surveys. The one located furthest to the west was conducted around Tell Leilan in the Khabur basin; the second more to the west, in the area around Tell Hamoukar, on the eastern limit of the Khabur basin. The third survey was conducted in the Iraqi Jazira, in the area between Jabal Sinjar and the rolling hills on the western bank of the Tigris. The area covered by these three surveys is mostly flat and cut by streams. Some of these streams are almost invisible due to the intensive agriculture. The plain is drained by the intermittently-flowing Wadi al-Murr which feeds the Tigris. This part of Jazira is a natural pass which leads from the Iraqi areas located along the Tigris river to Anatolia (Wilkinson, Tucker 1995: 3–5).

The plains located to the south from the elongated ridges of Jabal Sinjar, Jabal Ishkaft, Jabal Sasan, Jabal Zambar, and Jabal Ibrahim were surveyed by Ibrahim. These ridges are separated by corridors enabling communication between areas surrounding them. The Tell ’Afar/Sinjar plain is cut by streams flowing from north to south, eventually forming the 300-km-long Wadi Tharthar.

On the eastern bank of the Tigris and to the south of the UGZAR project's area stretches the Erbil plain which is currently investigated by the Erbil Plain Archaeological Survey (EPAS) project. The Erbil plain is bounded by the Greater Zab and the Bastora in the north-east and north-west, by the Lesser Zab and the first anticlinal hill (Avanah Dagh and Zurqah Ziraw Dagh) separating the Erbil plain from the Makhmur plain in the south and south-west, and by the watershed between the Erbil plain and the Shalgha river in the east (Ur et al. 2013).

The region to the east of the Erbil plain and to the south-east of the UGZAR area is studied at present by the Koya Archaeological Survey directed by Cinzia Pappi (University of Innsbruck) (Pappi 2017). The area is quite hilly and cut by numerous smaller streams and two main water sources: rivers Shalgha and Koi. The area is bordered from the south by the Lower Zab and from the east by the Hab-es-Sultan Dagh separating it from the Rania plain.

The northern limit of the UGZAR area is constituted by high and difficult to pass mountains. The Khalifan Archaeological Project directed by Claudia Beuger operates behind this northern border of the UGZAR area (Beuger, Suleiman 2017). The area further north is being surveyed by the Rawanduz Archaeological Project (directed by Michael D. Danti from the Boston University) (Danti 2014).

The concession's area is adjacent to the core of the Assyrian Empire with its famous cities of Nineveh, Kalhu, Dur-Sharrukin, and Balawat located just behind the Bardarash, Maqlub, and Ba'shiqa mountains and Erbil to the south of the Bastora.

Main aims of the UGZAR project and their realization

UGZAR is the name of the survey which formed a part of the project "Settlement history of Iraqi Kurdistan." The first part of the project (grant no. 2011/03/B/HS3/01472) was conducted in the years 2012–2015, and the second (grant no. 2014/13/B/HS3/04872) in 2014–2018. The project was financed by the National Science Centre, Poland (Narodowe Centrum Nauki, NCN).

Project's goals

The lack of knowledge about the past of the Kurdistan region and the stable political situation encouraged archaeologists to start work in this area of Iraq at the beginning of the current decade. There are over 40 archaeological projects, both excavations and

surveys, which cover almost the whole area of the Iraqi Kurdistan (Kopanias, MacGinnis 2016; Kopanias, MacGinnis, Ur 2015; Giraud et al. 2016; Pfälzner, Sconzo, Puljiz 2015; Morandi Bonacossi, Iamoni 2015; Danti 2014; Ur et al. 2013; Miglus et al. 2013; Kopanias et al. 2013; Eidem 2013; MAIKI 2012). One of these projects was the UGZAR project whose aims can be generally summarized as the documentation of Iraqi Kurdistan's archaeological heritage. To achieve this goal, it was first necessary to verify sites plotted on maps published in the *Atlas of the Archaeological Sites of Iraq* (Salman 1976) and listed in the *Archaeological Sites of Iraq* (Salman 1970) and to identify other archaeological sites which so far had remained unknown or forgotten, as well as other heritage monuments such as rock reliefs, various architectural remains (for example, old churches, mosques, forts), and also old cemeteries. Moreover, the project has also documented numerous caves and rock shelters, some of which may contain prehistoric remains. Another crucial element of the project was to document the state of preservation of the sites. This point was very important because archaeological sites are under constant threat; thus, a decision was made to record the scale of damage suffered by the archaeological sites and to draw attention to the human and natural factors that threaten them. A detailed database of archaeological sites and their state of preservation is a crucial starting point for future heritage management projects.

The UGZAR project forms a part of a wider scientific network, called the Assyrian Landscapes Research Group, composed also of the Land of Nineveh Archaeological Project (directed by Daniele Morandi Bonacossi, University of Udine), the Erbil Plain Archaeological Survey (directed by Jason Ur, Harvard University), and the Eastern Habur Archaeological Survey (directed by Peter Pfälzner, Eberhard Karls University of Tübingen).

Project's realization

The UGZAR project was initiated by Prof. Rafał Koliński from the Institute of Archaeology of the Adam Mickiewicz University in Poznań. Six field seasons—usually lasting from mid-August to mid-October to take advantage of the lack of vegetation on most of the fields, bearable temperatures, and the lack of rainfall—were undertaken between 2012 and 2017. The fieldwork started in the Erbil province, along the Bastora and the Greater Zab rivers and in the area between them. During the next three seasons, the project's team operated in the Dohuk province, to the west from the Greater Zab river.

For the last two seasons, we came back to the eastern part of the concession to investigate the rest of the area. In total, the survey has documented 317 sites, 110 caves, and 78 architectural features, including old mosques, churches, monasteries, water mills, forts, castles, and cemeteries, and four rock reliefs.

The project's team directed by Rafał Koliński was composed of archaeologists Dorota Ławecka (deputy director, Institute of Archaeology, University of Warsaw), Xenia Kolińska (deputy director, Past and Present Foundation), Dariusz Szeląg, Jakub Brochocki (both Institute of Archaeology, University of Warsaw), Michał Krueger, Mikołaj Kostyrko, Agata Smilgin, Adam Lokś, Filip Wałdoch, Daria Sawicka, Jan Dołgowicz, Joanna Mardas (all Institute of Archaeology, Adam Mickiewicz University), Arthur Stefanski (Near and Middle Eastern Civilizations, University of Toronto), Karolina Do Huu (Institute of Archaeology, Wrocław University), Pieter Swart (University of Groningen), Maciej Czarnecki, Mateusz Korpusik (freelance archaeologists), Kurdish inspectors Hiwa Shimal Ahmad, Omar Hussein Sharif, Sarkaft Amr Tajaldin, Atheel Ibrahim Abdalla, Khaleed A. Mahmud (Akre Office of Antiquities), Khalil Ali Barzanji, Rozhgar Rashid, Karwan Abdulrahman Muhammad Aziz, Rebwar Jalal Aziz (Direction of Antiquities in Erbil), photographers Jerzy Wierzbicki (also an archaeologist), Marcin Szabłowski, Dariusz Piasecki, Sonia Tlili, draughtsmen Lorvan Walika, Muhammad Walika, Romuald Jeziorowski; during the seasons in 2015 and 2017, the team was also assisted by Michalina Dzwoniarek-Konieczna, an archaeologist-geologist.

Previous investigations in the Upper Greater Zab Archaeological Reconnaissance (UGZAR) project's concession area

The chances that a particular region has been archaeologically investigated depend on a few factors. The first one is the interest of researchers whose preference for certain periods or subjects influence their choice of sites or areas to be explored. The second factor is the political situation in the region of interest; unstable and dangerous conditions often prevent the conducting of archaeological work. Yet another factor is the launching of big building projects which threaten numerous archaeological sites and, in consequence, lead to salvage excavations and surveys.

In the case of the Iraqi Kurdistan, the most important factor was the unstable situation which had lasted for a long time. After the First World War, Kurds were promised independence. However, the promise had not been kept, which caused tensions

between the Kurds and the British. The Kurdish people tried to achieve independence by rising subsequent revolts against the British, but their efforts were always thwarted (Dziekan 2002: 152–153). After the 14 July (1958) Revolution when the Hashimite monarchy was overthrown, the Kurds were again trying to gain autonomy; however, without results. This caused fighting between the Kurds and the new authorities (Jamsheer 2007: 98). The Kurds supported the coup of 8 February 1963 since they were given a promise of autonomy in exchange for their support for the new power. The promises remained unfulfilled, and an Iraqi–Kurdish war broke out (Jamsheer 2007: 101–102). The war ended in the mid-1970s with the agreement that the autonomy of Iraqi Kurdistan will be created, but in fact, it remained only on paper (Jamsheer 2007: 106, 110). After the Desert Storm operation in 1991, anti-regime uprisings took place in the Iraqi Kurdistan. After the fights between Kurdish insurgent troops and Iraqi government forces, "Iraqi regime withdrew its military and other personnel from most of the Autonomous Region in October 1991. At the same time, it imposed an economic blockade, gradually reducing oil supplies and centrally distributed foodstuffs" (Leezenberg 2005: 636). Also, the tensions and fights between the two main political parties: the Patriotic Union of Kurdistan (PUK) and the Kurdistan Democratic Party (KDP or PDK) precluded stabilization in the region (Jamsheer 2007: 126–127). The status of the Kurdish autonomy was confirmed by the new constitution of Iraq proclaimed after the end of the Second Persian Gulf War (Jamsheer 2007: 143). Thus, generally speaking, from the First World War till the end of the Second Persian Gulf War Kurdistan remained an area of more or less intensive conflict. The dangerous and unstable situation in Kurdistan hindered the conducting of any archaeological research in the region.

The other factor was that first archaeologists, for example Layard, Botta (who were active in the middle of the 19th century), and Andrae (working at the turn of the 20th century), as well as later researchers, focused mainly on huge sites such as Nineveh, Nimrud, Khorsabad, or Ashur which were the ancient capitals of Assyria. However, some smaller archaeological sites were explored as well, e.g., Tepe Gawra (Speiser 1935; Tobler 1950), Arpachiyah (Mallowan, Rose 1935). Some attention was paid also to other features in the landscape: Edmonds visited the relief in Battas (which lies next to Harir) (Edmonds 1931); Layard, Bachmann, and Badger visited the Gunduk cave; Bachmann was also interested in the reliefs in Bavian and Maltai (Badger 1852: 389–390; Layard 1853: 368–369; Bachmann 1927). Jacobsen investigated the remains of a Jerwan aqueduct (Jacobsen, Lloyd 1935). Archaeologists also undertook some surveys: Speiser

surveyed the regions of Suleimaniyah, Kirkuk, Erbil, to the south of Jebel Ba'shiqa, and the area stretching from Jebel Maqlub to Aqre (Barton 1927); a bit later, Lloyd undertook an archaeological survey of the Sinjar district (Lloyd 1938). In the late 1920s, the Joint Expedition of the American School of Prehistoric Research (R.A. Franks and F. Turville-Petre) and the Percy Sladen Memorial Fund (D.A.E. Garrod and C.A. Baynes) started pioneering investigations of prehistory in the Iraqi Kurdistan. The project was aimed at investigating prehistoric sites in the region of Suleimaniyah; the caves of Hazar Merd and Zarzi, which yielded Paleolithic material, were found at that time (Garrod 1930).

At the end of the 1940s, al-Amin and Mallowan opened soundings on three sites on the Makhmur plain (Kawla Kendal, Tell Ibrahim Bayis, and Tell Agrah) (Al-Amin, Mallowan 1949). A few years later, in 1951, the Shanidar cave was discovered and explored by Ralph Solecki (Solecki 1971). In the 1950s, archaeologists became focused on a broad range of research subjects, including the origins of food production, the development of settlement patterns, the economy, and the relationship between people and the environment. Braidwood's project was in line with those trends. Its aim was summarized by Braidwood in the following way: "How are we to understand those great changes in mankind's way of life which attended the first appearance of settled village-farming community?" (Braidwood, Howe 1960: 1). The Oriental Institute Iraq-Jarmo Project directed by Braidwood conducted three field seasons during the years 1948–1955. The project operated within the Greater Zab river basin between the Bekhme gorge and the Tigris plain and the region of the Chemal plain, the Bazian valley, and the Suleimaniyah plain. It was an interdisciplinary mission; much attention was given to registering the plant cover, climate, geology, and zoology. The work was focused on caves and small sites which could give a clue about life in the past. Within the UGZAR concession, Braidwood investigated Gird Ali Agha and Gird Chai (two sites on the eastern bank of the Greater Zab), and also the Barak, Hajiyan, Kaiwanian, and Spilik caves/rock shelters. Gird Ali Agha yielded Proto-Hassuna material (Braidwood, Howe 1960: 37–38) while Gird Chai's flint industry resembled the one from Karim Shahir (Braidwood, Howe 1960: 55). Barak and Hajiyan represented material from the Zarzian horizon (Braidwood, Howe 1960: 59–60), Spilik and the open site of Sarandur yielded Mousterian deposits (Braidwood, Howe 1960: 60–61), and at Kaiwanian, flint tools of Zarzian type were found (Braidwood, Howe 1960: 29).

In the later part of the 20th century, the explorations concentrated heavily on salvage excavations related to dam constructions and irrigation projects (the Mosul Dam, the

Ranya/Dokan Dam, the Darband-i Khan Dam, the North Jazira Irrigation Project). However, none were undertaken within the UGZAR concession area. In consequence, the area of the concession of the UGZAR project remained almost untouched. A few archaeologists and travelers have visited rock reliefs in Gunduk and Batas, Tell Tla'i on the Harir plain, and Akre, but the only archaeological project in the UGZAR area was undertaken in the mid 20th century by Robert J. Braidwood.

Fieldwork

Initial identifications

The UGZAR, just like the other survey projects working in the Iraqi Kurdistan, used various data for the preliminary identification of archaeological sites. Combined together, these sources produced quite good results during our work.

As there was not much previous archaeological fieldwork in the area, the main source on the identified archaeological sites in the fieldwork area was the *Atlas of Archaeological Sites in Iraq* published in Baghdad in 1976. The publication contains maps on which archaeological sites are plotted, divided according to administrative districts (including the areas of Harir, Shaqlawah, Rawanduz). It is, to a large extent, complementary to an earlier publication, *Archaeological Sites of Iraq* (Baghdad 1970) listing archaeological sites together with their periods of occupation and their location indicated by the name of a neighboring village. The maps from the atlas were georeferenced[1] to make the identification easier. As the sites' localizations were not always very precise, it was necessary to use other sources of information, first of all, the satellite imagery available through the Corona Atlas of the Near East, Bing™ Maps, and Google Earth™.

The Corona program (1960–1972) used spy satellites with cameras on board. The quality of the acquired imagery depended on the type of camera used; the most precise photographs came from satellites equipped with KH-4A and KH-4B cameras/lenses (Fowler 2013: Table 4.1). The photographs were recorded on black and white film, which can now be scanned in high resolution.[2] After the declassification of the Corona program was announced on 22 February 1995, the satellite imagery acquired during the program

[1] The georeferencing was based on old British Topographic Maps from 1910 (aina.org/maps/btmmaster.htm) and on a later map created on their basis by the Army Map Service of the U.S. Army in the early 1940s (available on the website of the University of Texas Libraries, https://legacy.lib.utexas.edu/maps/jog/iraq/).

[2] The scans of the photographs can be obtained on the website https://earthexplorer.usgs.gov.

became a valuable source for archaeologists who wanted to study past landscapes. Their usefulness for archaeology has been widely confirmed, not only in respect to identifying archaeological sites but off-site features as well (e.g., Fowler 2004; Challis et al. 2004; Ur 2003). Archaeological sites from the region of the Middle East show up usually as either grey-white or very dark spots; medium and large tells are especially well visible (also as shadow-marks). The usefulness of the Corona photographs results from the fact that they document past landscapes of the Near East before large agricultural transformations. The urbanization and the development of agriculture have a negative effect on the preservation of archaeological sites, and since modern satellite imagery documents the present landscape, some archaeological sites might not be visible on the images obtained this way.

Nevertheless, modern satellite imagery is very useful since some of the images are taken in very high resolution, and so even the very small sites can be visible (flat sites have better visibility on Corona). The satellite imagery used by the project is easily accessible via Google Earth™ and Bing™ Maps internet platforms. The images were used to help in the identification of the position of sites from the *Atlas* and also to find new potential sites. The satellite imagery available via Bing™ Maps has a higher resolution than Google Earth™; thus, it turned out to be more useful for an archaeological survey.

The visibility of archaeological sites on the available satellite imagery depends not only on the time when the images were acquired but also on the terrain as well as the type and size of the archaeological site. The highest chance for a site's detection occurs in flat areas. During the fieldwork, it turned out that the Corona imagery was an efficient means of detecting sites mainly on flat areas such as the Navkur and Harir plains. In the hilly areas, sites were either invisible or very hard to detect. In these cases, high-resolution imagery viewed on Bing™ Maps or via QGIS was much more useful (Koliński 2015). Some linear features were visible in some places (mainly in the Harash valley) on Corona, but when compared to the Bing™ Maps imagery, they turned out to be irrigation canals. However, it is difficult to determine their exact date, especially since they are also used nowadays. Within the UGZAR project's area, the so-called hollow ways were not detected on satellite imagery. Hollow ways were discovered in other regions, for example, at North Jazira (Wilkinson, Tucker 1995) or by the EPAS project (Ur et al. 2013); the LoNAP project also noticed some hollow ways around a few settlements (Morandi Bonacossi 2012–2013: Fig. 11).

Interviews with local people

The other method of sites' detection was interviewing local people. The interviews were usually conducted during the reconnaissance and also during the transects. The local people often had some knowledge about the places where potsherds could be found on the ground and where old graves or other remains of the past were present. They also knew the locations of caves since they used them as shelters for goats and sheep. The quality of information acquired in this way depends very much on the informant. In 2016, we met a young man called Ayad Ibrahim from the Naushiuani village who became really interested in our work. He led us to a few old cemeteries and places with potsherds and even volunteered to participate in one of the transects. However, when we asked other people in the village about places with potsherds, etc., they did not show us any. This example demonstrates that the interviews are effective if the right people are asked. Usually, elders and *muxtars* show a much more extensive knowledge on the subjects touched upon during the interviews.

Transects

Transects turned out to be a very effective method of sites' identification. The areas chosen for transects were the ones with the highest probability of site occurrence, such as areas along stream valleys. Transects were always preceded by a preliminary sites' identification on satellite imagery. However, sometimes the places where plenty of sites were expected turned out to be quite devoid of them. The methodology of carrying out transects evolved during the realization of the project. No transects were carried out during the 2012 field season. In 2013, a few small areas were covered with transects, located in the Karabak valley, to the north-east from Cucar Bcik, and along the wadi between the Shixanok Nue and Xaraba Zur villages. In 2014, only one transect was done, along eastern bank of a Shiv-i Akre, which starts in the vicinity of Akre and enters the Lalaie creek (one of the Greater Zab's tributaries). Not a single site was found. During the 2015 season, transects were conducted along the western bank of the Greater Zab river, in the vicinity of Kele Shex Bzn, to the north-east of Xaruk (within the river's bend), between Dalare and Banenan, to the north and south of Xandak, and along the Gume Zard Nue stream. The last three turned out to be especially fruitful. Basing on this experience, transects were continued also in 2016, mostly on the Harir plain along the Harash stream (Mamdi, Bashuri Xuaru, and Sursura) and its tributaries (Flon, Amokan, Arkaua,

Darbanduk, Batas, and Barazan). A few were conducted along the eastern bank of the Greater Zab river, in the vicinity of the Nekdar-Bakdar, Makrdan, Qurabak, and Qandil villages.

During the last season, five transects were undertaken: four along the Bastora (the central and eastern parts of the Bastora; the western part had been investigated in the 2012 season), starting from the east: Gomaspan, Grlu, Barbian, Parpitan, and one in the Qadiana valley.

During these seasons, the overall area covered by the transects totaled 73.74 km^2, constituting nearly 2.44% of the entire area covered by the fieldwork. As a result, 95 sites were identified, i.e., 30% of sites discovered during the seasons.

Documentation

Plans of the sites

During the work at a site, the team was divided into two groups. One was responsible for determining the area of the site and collecting potsherds, while the other was taking total-station measurements for the site's plan. Plans were created for most of the tells and for other sites of different types. The measurements were taken using total station TC407. Plans were based on an artificial coordinate system since usually there were no reference points to the local coordinate grid present on the sites. The collected measurements of points were used to document the present landform of the site, areas damaged by pits, buildings, graves, etc., as well as the site's limits and collection areas. Contour plans were created using the QGIS open-source software.

Collection of pottery

Pottery was collected from the selected areas of the site. The areas were more or less square and their location was marked out with respect to the site's morphology (areas on the top and slopes of a tell and in a lower city) or to the location of places with the biggest concentration of potsherds; sometimes accessibility was taken into account (parts of sites covered with buildings on the top of a tell or with very dense vegetation or too steep slopes were excluded). In the case of small sites, the collection area could cover the whole site. The collected potsherds underwent selection at the site.

Types of sites

During the fieldwork, various types of archaeological sites and heritage monuments were encountered. Some of them were easy to notice; others were more difficult to find or to reach.

Tells with and without a lower city

Tells are typically multi-period mounded sites, sometimes surrounded by a lower city. Their shape, size, and height vary, from very low and difficult to notice mounds to tells which rise high above the surrounding area. Some of them have gentle slopes; others are very steep. Tells occur on plains and in hilly terrain; sometimes they are formed on a natural hill. Their state of preservation varies: some are covered with graves, some are damaged by looting pits or agricultural activities, and some have been bulldozed either for building purposes or earth extraction.

Flat settlements

Flat settlements occur quite often. They are the most difficult type of site to be recognized on the ground and also one of the most common types.

Cemeteries

The UGZAR documented only those cemeteries which had old, decorated tombstones. They were either shaped like a sword hilt or decorated with relief or incised decoration depicting a sword, a dagger, a gun, or other symbols. Only occasionally they bore Arabic inscription. GPS measurements were taken for each encountered cemetery, and the graves which were of interest to us were photographed.

Architectural remains

The other category of documented heritage sites included architectural remains. To this group belong various structures, such as old churches, monasteries, synagogues, mosques, houses, water mills, and defensive structures (such as forts/khans[3]). The state of preservation of these objects varies; some are quite well preserved while in other cases only foundations remain. The buildings are usually built of stone blocks.

Applied chronology

The chronology of the sites was determined on the basis of some characteristic pottery shapes and decoration, according to the *Working Ceramic Typology* prepared by

[3] They are usually located in places which are difficult to reach but which give a good view of the surrounding area.

Jason Ur (6th edition 2012, 7th edition 2013). This typology is used by four survey projects cooperating within the framework of the Assyrian Landscapes Research Group. It is based on the final ceramic typology developed during the Tell Hamoukar Survey (THS) (Ur 2010). It has its roots in the ceramic typology used by the North Jazira Project (NJP), which was a basis for the *Working Survey Typology for the Upper Khabur Basin* applied later during the surveys around Tell Beydar, Tell Brak, and also Tell Hamoukar when it was expanded to include new types of pottery (Ur 2012: 2).

Table 1. Periodization used by the EHAS, EPAS, LoNAP, and UGZAR surveys. Designations and approximate dates after Akkermans, Schwartz 2003; Rothman 2001; Stein, Alizadeh 2014; Wilkinson, Tucker 1995

Period	***Designations***	***Dates***
1	Hassuna; Samarra	6500–5900 BC
2	Halaf	5900–5300 BC
3	Ubaid	5300–4500 BC
4	Early Northern Uruk; LC1–2; Post-Ubaid	4500–3800 BC
5b	Northern Middle Uruk; LC3, 4, 5	3800–3000 BC
5a	Southern Middle to Late Uruk; LC 4–5	
6	Ninevite 5; EJ I–II; early EBA	3000–2600 BC
7	Mid-late 3rd millennium; ED III, Akkadian–Post-	2600–2000 BC
8	Old Babylonian; Khabur; MB II	2000–1600 BC
9	Mitanni; early LBA	1600–1400 BC
10	Middle Assyrian; later LBA	1400–1000 BC
11	Iron Age; Neo-Late Assyrian	1000–600 BC
12	Post-Assyrian; Neo-Babylonian–Achaemenid	600–330 BC
13	Seleucid; Hellenistic	330–125 BC
14	Parthian; Roman	125–250 AD
15	Sassanian	250–650 AD
16	Late Sassanian–Early Islamic	600–700 AD
17	Early Islamic (Abbasid)	700–1000 AD
18	Middle Islamic	1000–1300 AD
19	Middle-Late Islamic	
20	Later Islamic	1300–1900 AD
21	Undifferentiated Islamic	700–1900 AD

As Jason Ur points out, the adopted ceramic typology has a huge impact on later settlement interpretations. Survey types best for dating are the ones which occur frequently and are morphologically robust, typologically distinctive, and chronologically

short-lived. However, there are types which occur in more than one period and thus are difficult to date. There are also types which are fine-wares and might occur less frequently or be severely damaged; in consequence, the sites from a certain period (for example Period 6 – Early Bronze Age) might be underrepresented, which may lead to erroneous interpretations concerning depopulation (Ur 2012: 1).

The chronology of northern Mesopotamia is a mixture of relative and absolute dating. It combines the results of excavations at multi-period sites with radiocarbon dating and historical information from written sources (Ur 2012: 1). However, the historical chronologies are uncertain and controversial. Efforts undertaken to reconcile historical chronology and sequences of ceramics cause even more problems since pottery production was not related to ruling structures (Stein, Blackman 1993: 53; Ur 2012: 1–2). In consequence, the *Working Ceramic Typology* uses periodization based on changes in ceramic types and refers to historical divisions but is not coterminous with them (Ur 2012: 2).

Moreover, some periods are partly overlapping rather than completely sequential; periods 15 and 16 overlap with each other, and the same situation occurs in the case of periods 16 and 17 (Ur 2012: 125, 130). Period 12 is poorly understood in northern Iraq, and its assessment in Wilkinson and Tucker (1995: 101) was preliminary. There was also a problem with periods 9 and 10; pottery types were grouped as belonging to period 10, instead of being divided between both periods.

State of preservation of archaeological sites

Destruction of archaeological sites is a process which begins already when a site is inhabited. Archaeological sites can be damaged either by human activities or by natural factors. Since the situation in Kurdistan had stabilized, the economy, urbanization, and agriculture started to develop very fast, as can be seen in every part of the region. Settlements are growing, new houses and housing estates are being built, and new villages are founded, which also creates a demand for new roads. All these activities are threatening archaeological sites (Mardas 2017).

New houses and roads require building materials, one of which is gravel used for concrete blocks. Gravel is extracted from river valleys (mainly of the Greater Zab and the Bastora). This type of activity turned out to be the most dangerous for archaeological sites, threatening those which lie on the river bank, as illustrated by the case of

US150/S002. It was recorded during the 2012 season in an agricultural field, only slightly damaged by river activity, but generally, its state of preservation was quite good. In 2014, we observed that almost the whole site was destroyed in order to reach gravel deposits underneath.

Also, digging for clay[4] and using bulldozers can cause serious damage. Digging for clay affects only tells; one of the slopes is being cut more and more, gradually exposing the whole section of the site. Bulldozers are used to make space or to level the ground before building activities, such as the construction of roads, houses, or fish ponds. After such preparations, some sites resembled an apple core (US040), others were leveled to a large degree (US007) or almost completely dug out to create fish ponds (US153, US121).

Another source of damage are cemeteries, both old and new. The digging of grave pits disturbs upper layers of a site and leaves them full of holes, but at the same time, a cemetery prevents houses or other structures from being built at the site.

The most commonly occurring types of damage are caused by agriculture, although they are less serious and much slower than the other types. Agriculture affects most extensively flat sites and lower city areas of larges sites.

Some sites also bore other traces of damage, caused by well-pits (huge, elongated pits with a motor pump at the bottom), looting, irrigation canals, chicken farms.

When it comes to natural erosion, the most endangered sites are those which lie on the banks of rivers and streams or in the mountains, as well as mounded sites. Flowing water can undermine parts of sites. The mounded sites, especially when located on natural hills, are particularly endangered by seasonal rains and wind erosion which can wash or blow away cultural layers.

Other surveys

In this dissertation, references to the results of other surveys will be made. Most of them are located in northern Iraq, including three recent surveys (EPAS, LoNAP, EHAS) and two undertaken in the late 1970s (Ibrahim's survey5) and 1980s (North Jazira Project

[4] Digging for clay affects only the mounded sites; villagers use clay as a building material for the renovation of their households (as mortar or plaster).

[5] Ibrahim's survey included some of the sites registered by Seton Lloyd who, in the spring of 1938, directed an archaeological survey in the Sinjar district. The aim was, as Lloyd writes, "to investigate as many ancient sites as possible in the neighborhood of Jebel Sinjar, in order to link up the Khabur region, so thoroughly examined by Mr. Mallowan in 1934, with the river Tigris and the archaeologically better known area to the east of it" (Lloyd 1938: 123). Lloyd's mission discovered 78 archaeological sites which were then listed in a small catalog; only in the case of 21 of the sites some additional information (besides names) were given

– Wilkinson and Tucker's survey). I will also refer to two surveys from the Khabur triangle (around Tell Leilan and Tell Hamoukar) since these areas are located very close to the area of Tell-el Hawa and represent similar cultural traditions (Fig. 1, 2).

Ibrahim's survey (1978–1979) focused on archaeological sites located in the Iraqi Jazira; more attention was paid to the sites dated from the end of the Assyrian till the end of the Sassanian period, especially to those from the Parthian period. The area investigated by Ibrahim spreads between the Euphrates and the Tigris and from the north-western Iraqi border to the area around Tikrit. He divided it into eight smaller regions, five of which (1, 2, 3, 4, and 5) belonged to the northern part of Iraq (East and Upper Jazira); these are the regions that I will refer to. Ibrahim examined 268 sites, some of which had been previously surveyed by Oates (unpublished), listed in the *Archaeological Sites in Iraq* (1970, Directorate General of Antiquities, Baghdad), or registered by the State Organization of Antiquities and Heritage in Baghdad. Ibrahim mentions that over a period of two seasons, he "was able to survey most of the parts of Jazirah personally, covering the regions of Hatra, Baqqa, Baiji, Tekrit, Sharqat, Qairyra, Haman al-Alil, Tell Abta, Tell 'Afar, Sinjar, Haditha and Ana" (Ibrahim 1986: 40). The collected finds are stored in Hatra and some in Baghdad (Ibrahim 1986: 40). Sites were the most numerous in region 4, i.e., the area around Tell 'Afar. Most of the sites were located to the south, south-west, and south-east from the city; to the north, there were fewer of them (Ibrahim 1986: Pls 10–13). The sites investigated by Ibrahim date back to Hassuna and Samarra. In total, there were 58 prehistoric sites (from Hassuna till the end of Ninevite 5).

Wilkinson and Tucker's survey (1986–1990)[6] was located in the area of Tell al-Hawa for two reasons: firstly, because of the archaeological potential of the area; secondly, because of the irrigation project that was planned there. Wilkinson and Tucker's goal was to recognize, describe, and date on the basis of surface pottery the archaeological sites found during the field survey. They also examined "features and artifact distributions that occur between the obvious mounded sites in order to establish whether smaller settlements may have been present and to detect traces of ancient land use and communications" (Wilkinson, Tucker 1995: 1). In addition, four selected sites were excavated: Khanijdal, Tell al-Hawa, Tulul al-Biyadir, and Khirbet 'Aloki. The

(Lloyd 1938: 134–142). Sites recorded by Lloyd's survey in the area of Sinjar were included in the *Archaeological Sites of Iraq*, which was then used by Ibrahim (Koliński, personal communication).

[6] The project ended prematurely (the final 5th season did not take place) due to the "events following the invasion of Kuwait in August 1990" (Wilkinson, Tucker 1995: 1).

survey registered 184 sites, 122 of which yielded prehistoric remains. The sites were distributed over an area of 475 km^2.

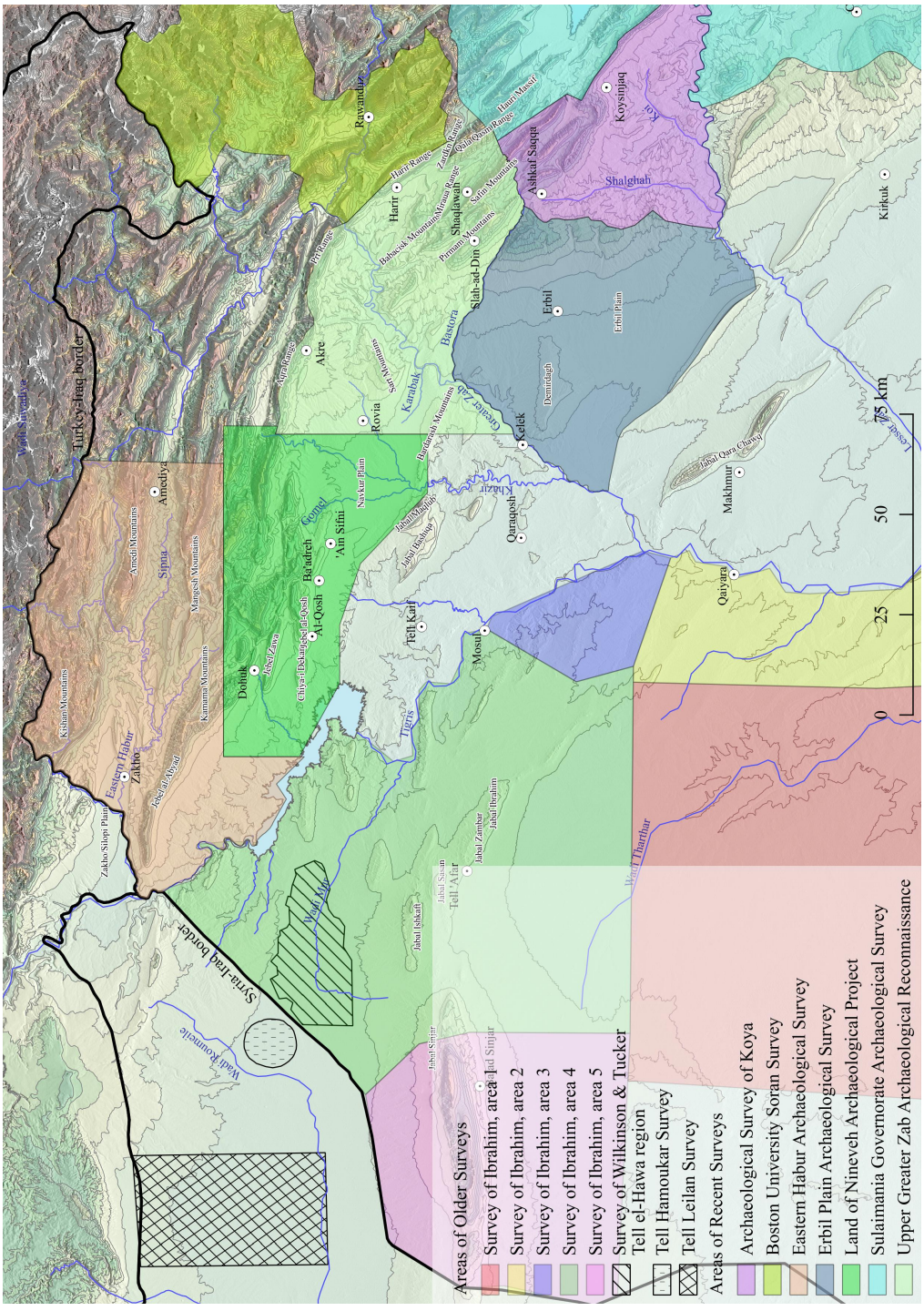

Fig. 1. Surveys in northern Iraq and the north-eastern limit of Syria (map: J. Mardas)

The survey of the Tell Leilan region was undertaken in the years 1984, 1987, 1995, and 1997, and an intensive survey of Tell Leilan itself was carried out in 1978. The first season of the survey covered the area within a 15 km radius around Tell Leilan. During the second season, all the sites dated to the 3rd millennium BC were revisited "in order to

determine how the organization of its countryside changed when Leilan became a 90-hectare urban centre" (Ristvet 2005: 35). In the 1995 season, the survey area was extended to cover a 30-km-wide belt stretching from the Turkish to the Iraqi border. All sites were revisited in 1995 and 1997 (Ristvet 2005: 36).

The survey of the area within a 5–7 km radius around Tell Hamoukar, covering 125 km^2, took place during three seasons between 1999 and 2001. Previous reports concerning Tell Hamoukar yielded conflicting information about 4^{th}-millennium pottery, and thus "a major goal of the Hamoukar surface collection was to characterize its fourth-millennium assemblage and map closely the relative spatial distributions of artifacts of local and southern derivation" (Ur 2010: 2). The area around Tell Hamoukar "offered the opportunity to investigate larger issues of landscape and subsistence in the context of early northern Mesopotamian urbanism" (Ur 2010: 2). The project also focused on recording off-site features such as field scatters or hollow ways (Ur 2010: 1–3).

The four recent survey projects (EHAS, LoNAP, UGZAR, and EPAS) cooperate within the Assyrian Landscape Research Group, initiated in 2012. The group uses the same pottery typology and exchanges knowledge and observations. Similar methods of work and the same catalog of potsherds used for dating will allow for a better comparison of the projects' results.

The Eastern Ḫabur Archaeological Survey (EHAS) is directed by P. Pfälzner and P. Sconzo from the Tübingen University. The EHAS project aims "to determine the potential of the region to provide resources of cultural value; to identify changes in the settlement system of the region over time as result of external political impacts; to assess the role of the region in inter-regional exchange and communication; to study the social and cultural dynamics in the region as a consequence of the external relations with lowland Mesopotamia" (Pfälzner, Sconzo, Puljiz 2015: 93). The project operates in the field since 2013; during the 2013–2016 seasons, areas between the Tigris and Jebel al-Abyad, as well as the Habur river basin (between Jebel al-Abyad and the Ser Amedi mountain range) were surveyed. The project also conducts excavations at Bassetki and Muqable I–III.

East of the EHAS operates The Land of Nineveh Archaeological Project (LoNAP) started in 2012 and directed by D. Morandi Bonacossi from the Udine University. The project aims to study settlement patterns and land use, especially in relation to water and soil, as well as to reconstruct the ancient natural environment. The project also conducts excavations at Tell Gomel (Gammagara/Gaugamela) (Morandi Bonacossi, Iamoni 2015).

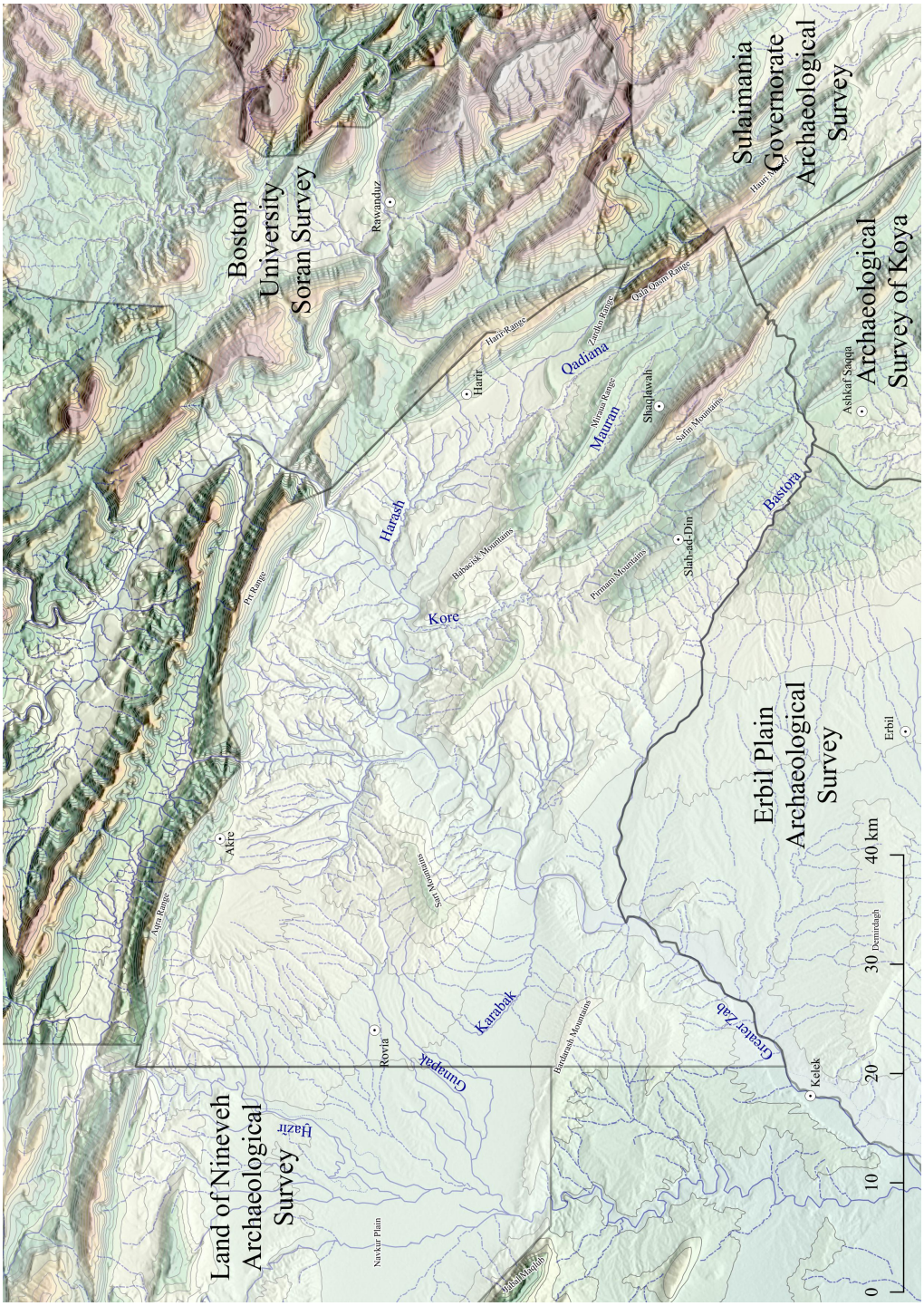

Fig. 2. UGZAR area and neighboring survey projects (map: J. Mardas)

The third component of the Assyrian Landscape Research Group is The Erbil Plain Archaeological Survey (EPAS). It is one of the biggest survey projects in the Iraqi Kurdistan; it borders on the UGZAR region from the north, covering the area of two

Assyrian provinces: Arbail and Kilizu (Ur et al. 2013: 90). The project is directed by J. Ur from the Harvard University. The Iron Age is the main period of interest of the EPAS; however, other periods will be studied as well. During the Neo-Assyrian period, mass deportations took place; in the Jazira, it is evidenced by a number of small villages, but the subject has never before been investigated in the Assyrian heartland. The project is also interested in the agricultural system, remains of which (canals, etc.) are visible on the Corona imagery (Ur et al. 2013). So far, the southern part of the project's concession and also a few small areas along the Bastora and the Greater Zab have been investigated.

Table 2. Comparison of chronologies used by Ibrahim (1986) in the Tell ' Afar region, Wilkinson and Tucker (1995) in the Tell al-Hawa region, and the UGZAR

Ibrahim	Ibrahim's dating	Wilkinson Tucker	Wilkinson & Tucker's dating	UGZAR (no of the period)	UGZAR	Akkermans, Schwartz 2003; Rothman 2001; Stein, Alizadeh 2014
Hassuna	6500-5500	Hassuna	6000-5000 BC	1	Hassuna/Samarra	6500-5900
Samarra						
Halaf	5000-4500	Halaf	5000-4300 BC	2	Halaf	5900-5300
Ubaid	4500-4000	Northern Ubaid	4300-3700 BC	3	Ubaid	5300-4500
Uruk	4000-3500	Northern Uruk	3700-3000 BC	4	LC1-2, Early N Uruk, Post-Ubaid	4500-3800
				5b & 5a (Southern Uruk)	LC3-5, N Middle Uruk, Souther Middle Uruk, Late Uruk	3800-3000
Nineveh V	Later 4th mill.	Ninevite 5	3000-2500 BC	6	Ninevite 5, EJ i-II, ED I-II	3000-2600

Chapter 2: A study of settlement patterns in archaeology

At the beginning of this chapter, the origins and first steps of settlement pattern studies are characterized. Next, I discuss the changing concepts of the determinant factors influencing settlement patterns which have been developed in archaeology since the beginning of settlement studies until the present day. The following section presents the theoretical assumptions which were or still are underpinning the settlement pattern studies. The next part of the chapter deals with problems and difficulties occurring during the interpretation of survey data. The last part outlines the way in which I will proceed with the interpretation of survey data.

Development of studies of settlement patterns in archaeology

A few studies regarding settlement appeared at the turn and in the first half of the 20th century (Morgan 1881; Mindeleff 1900; Braidwood 1937; Steward 1938). Morgan's (1818–1881) publication of 1881 can be considered the very beginning of settlement pattern studies. Morgan was interested in "how the remains of aboriginal residential architecture in North America reflected the social organization of the prehistoric peoples who occupied them" (Parsons 1972: 127–128). Mindeleff (1863–1938) investigated the migration traditions of Tusayan clans (Native Americans in the Southwest) and the occupational history of their villages on the basis of architectural remains. A few decades later, in the region of the Middle East, Braidwood (1907–2003) undertook another project which was important for the development of settlement pattern studies. The goal of his survey in the plain of Antioch was to create an inventory of all archaeological sites, including their chronology and distribution in each period (Braidwood 1937: 1). Later, Braidwood conducted another survey, a multidisciplinary project in modern Iraqi Kurdistan, which was not aimed this time at creating a simple catalog of archaeological sites but was devoted to a specific research problem, namely the shift from cave to village life.

A significant impact on the development of settlement pattern studies had an American ethnologist Julian Steward (1902–1972). Steward published a paper together with Setzler (1902–1975) in which they postulated that archaeological data should be used to study settlement patterns, subsistence economies, and population size, rather than being only analyzed in the context of style (Steward, Setzler 1938: 7–10). According to Trigger (2006: 372), Steward also "greatly enhanced an awareness of the role played by ecological factors in shaping prehistoric sociocultural systems." For Steward, however, ecological factors were not always the most important determinants influencing settlement patterns. They had a stronger impact on primitive societies, but in the case of more developed cultures, this influence was not so evident: "In proportion that societies have adequately solved subsistence problems, the effect of ecology becomes more difficult to ascertain. In complex societies certain components of the social superstructure rather than ecology seem increasingly to be determinants of further developments" (Steward 1938: 262).

The publications mentioned above constitute the pioneering works on settlement patterns. However, it was not until the publications of Philips, Ford, and Griffin (1951) and Willey (1953) that the settlement pattern studies started for good. The project of Philips (1900–1994), Ford (1911–1968), and Griffin (1905–1997), undertaken in the Lower Mississippi valley between 1940 and 1947, consisted of a site survey and an analysis of a ceramic collection, as well as stratigraphic tests on archaeological sites amended by small-scale excavations on the most important ones (1951: 40). A lot of attention was paid to pottery, but the classification and sampling of sites and changes through time were also investigated. Their survey was rather sampling the evidence: "we were not trying to locate every spot which had been occupied in the prehistoric times but were endeavoring to visit and describe enough sites in all parts of the area to make possible a general reconstruction of its prehistory" (Philips, Ford, Griffin 1951: 309). They also grouped sites according to their deducted principal purpose and plan and plotted them on distributional maps.

The research undertaken by Philips, Ford, and Griffin was important, but it was the project of Gordon Willey (1913–2002) in the Viru valley in northern Peru that set the direction for settlement pattern studies. Willey was clearly inspired by Julian Steward, his colleague at the Bureau of American Ethnology in Washington where they often discussed the potential of archaeological data for obtaining information about ecology, culture, and society (Rouse 1972: 96). At that time, Steward had already published two

studies about the settlement in the American Southwest and southern California (1937) and also in the Great Basin area (1938). Steward stressed "the lack of, and necessity for, settlement pattern studies in archaeology. It was his belief that archaeology could best place itself in the position of contributing to the interpretation of the nonmaterial and organizational aspects of prehistoric societies through a study of habitation and settlement types" (Willey 1953: xviii).

Inspired by Steward, Willey started his archaeological project in the Viru valley in 1946. Besides the simple description of sites in terms of their geography and chronology, Willey also wanted to investigate their development in relation to function and sequence, but what is even more important, the project aimed "to reconstruct cultural institutions insofar as these may be reflected in settlement configurations" and "to compare the settlement story of Viru with other regions of Peru" (Willey 1953: 1). However, Willey did not adopt the ecological approach of Steward completely, as shown by his definition of settlement patterns which he understood as "the way in which man disposed himself over the landscape on which he lived. It refers to dwellings, to their arrangement, and to the nature and disposition of other buildings pertaining to community life. These settlements reflect the natural environment, the level of technology on which the builders operated, and various institutions of social interaction and control which the culture maintained. Because settlement patterns are, to a large extent, directly shaped by widely held cultural needs, they offer a strategic starting point for the functional interpretation of archaeological cultures" (Willey 1953: 1). Willey did not reject the role of environmental factors in shaping settlement patterns, but he also saw that social and cultural factors played an important role as well. For Willey, settlement patterns were a source of information about different aspects of human behavior. By pointing out the significance of other factors besides the environmental ones, Willey brought attention to the settlement pattern research as the source of data for the study of economic, social, and political aspects of past societies (Trigger 2006: 376–377). Feinman writes that Willey's project "was the first to formally elucidate the scope and potential analytical utility of settlement patterns for understanding long-term change in human economic and social relationships. His vision moved beyond the basic correlation of the environmental features and settlements as well as beyond the mere definition of archetypical settlement types for a given region" (Feinman 2015: 655). These ideas were later developed in his other book *Prehistoric Settlement Patterns in the New World*, published in 1956. In the introduction (Willey 1956: 1), he wrote: "In settlement, man inscribes upon the landscape certain

modes of his existence. These settlement arrangements relate to the adjustment of man and culture to environment in the broadest sense. Viewed archaeologically, settlements are, like any prehistoric residue, the incomplete and fragmentary oddments of something that was once vital and whole. Nevertheless, settlements are a more direct reflection of social and economic activities than are most other aspects of material culture available to the archaeologist" (after Sabloff, Ashmore 2001: 16). Willey's work inspired archaeologists to study past societies from a different perspective, not as single sites or only representatives of a certain culture but as an interlinked network of elements related to each other and to the environment.

Willey's publications about the Viru valley were crucial for the development of the modern settlement pattern studies because they not only set the directions but also were of great interest to other researchers. In 1957–1958, Robert M. Adams (1926–2018) initiated a large-scale settlement pattern research in the Diyala region (Adams 1965). Later, during the winter and spring of 1967, Adams and Hans J. Nissen (1935–) started investigating settlement patterns in southern Mesopotamia, around Uruk/Warka (Adams, Nissen 1972). Other regions were also researched, e.g., Mexico, the Aegean, Europe, and the USA (papers on these regions can be found for example in Ucko, Tringham, Dimbleby 1972).

Since the 1970s, Binford (1931–2011) and the New Archaeology encouraged archaeologists to apply sophisticated statistical, quantitative, and mathematical techniques to investigate human behavior. It was quickly noticed that the settlement pattern approach "fit into the agenda of the new or processual archaeology and was seen as an important methodological tool by many of the early 'new archaeologists'" (Sabloff, Ashmore 2001: 17–18). The representatives of New Archaeology saw that the settlement pattern studies had a huge potential for the application of processual models, various statistical methods, and sampling strategies which formed an important part of the New Archaeology. The huge advantage and attractive element of the settlement research was the fact that it was not focused only on simple classification but touched upon the economic, political, ideological, and social spheres of culture (Sabloff, Ashmore 2001: 18–20). These were some of the reasons why the settlement pattern studies became so enthusiastically accepted by archaeologists.

However, the representatives of New Archaeology were not the only ones who adopted settlement pattern studies. Archaeologists with cultural evolutionary views as well as those with a more interpretative approach applied them likewise. According to

Sabloff and Ashmore (2001: 19), the settlement pattern research gained popularity among new and traditional archaeologists because of "its attention to the social dimension at all levels of cultural complexity, from mobile hunter-gatherers to sedentary states, and its concern with cultural variability at a variety of spatial states."

The huge and tempting potential of settlement pattern studies lay in the abundance of topics that could be raised within their framework. Three popular themes included household archaeology, scalar variability, and evolutionary thresholds. The household archaeology also evolved from settlement pattern studies. Archaeologists became interested in the life of ordinary people and not just the elites. They investigated the cycle of house development, the organization of space and its relation to class and kin structure (for example, Gnivecki 1989; Veenhof 1996). Settlement pattern research also brought attention to the settlement features of variable scale. The traditional "site" was not the only category that was taken into consideration; attention was also paid to other remains of past human activities such as systems of agricultural fields, road networks (Wilkinson 1993), and diffuse artifact scatters.[7] Evolutionary thresholds refer to the origins of sedentarism, urbanism, and social complexity which were important aspects of processual archaeology. The investigation of these stages required mapping the distribution of cities, villages, and other kinds of settlement, which was, in fact, one of the main tasks of settlement pattern studies (Sabloff, Ashmore 2001: 21–22). One of the projects which tried to investigate such a threshold, namely, the change from living in a cave to living in a village, was the above-mentioned Braidwood and Howe's survey in the Iraqi Kurdistan initiated in the autumn of 1954.

Settlement patterns: theories determining research, factors shaping settlement patterns

When discussing the settlement pattern studies, it is impossible not to mention the assumptions underpinning the research. Changes in the settlement pattern are very slow. But what causes changes in the settlement? And why does the settlement look the way it does? What caused villages, camps, and cities to appear in some places and not others? And what does it all mean? A high number of topics raised within the framework of the settlement pattern studies caused the latter to be willingly and universally applied, and

[7] The investigation of these features required new techniques of documentation and survey such as aerial photos and, more recently, satellite imagery, GPS measurements, etc.

the multiplicity of topics meant also a variability of interpretations regarding the factors influencing settlement patterns. Different views and theoretical assumptions not only determine the course of the research but also influence interpretations of the results. Since the very beginnings, the environment was a crucial element in the studies regarding the settlement. Different approaches treated the relationship between humans and the environment variously. Nevertheless, it was a crucial element in archaeological and also historical approaches.

Some of the first settlement studies were inspired by Friedrich Ratzel (1844–1904) who created anthropogeography. In his view, humans constitute part of nature and are dependent on the law of evolution, which places Ratzel among the representatives of geographical determinism maintaining that natural conditions such as topography, soils, and climate determine people's choices, life, and cultural values (Eberhardt 2015: 204–209). Thus, the most important thing to investigate were the environmental factors that influenced human development and migration, such as climate, terrain, soil, and vegetation (Wylie 2007: 22). All the elements of material culture were perceived as the result of human adaptation to the natural environment. Such assumptions were at the heart of early studies concerning settlement; for example, Steward's approach was already marked with environmental determinism, while his follower, Willey, paid more attention to social and cultural factors, thus representing rather the assumptions of environmental possibilism.[8]

[8] An entirely different point of view towards the relationship between the environment and humans was expressed by Carl Sauer (1889–1975) who was an influential cultural geographer and creator of cultural landscape studies in the USA. His views were also deterministic, but this time, culture was the agent. Sauer believed that the force shaping the landscape was culture as a superorganic entity (a concept developed by Alfred Kroeber [1876–1960] and Robert Lowie [1883–1957] in the first quarter of the 20th century which assumed the existence of cultural determinism also towards landscape). This extreme understanding of culture was adopted by, for example, James Ford (O'Brien, Lyman 1998: 324). As Willey and Phillips pointed out, plenty of archaeologists "without subscribing to the superorganic view of culture, have nevertheless operated 'as if' it was a fact" (Willey, Phillips 1958: 3). Carl Sauer believed that it was not the environment that was influencing people but rather it was people who were transforming the environment; thus, for him, the relationship between culture and landscape was reversed (Wylie 2007: 22). According to Sauer, culture was viewed as an entity above a man, operating on a suprahuman level; an entity governed by its own rules (Duncan 1980: 182), "with the agency to govern human behavior from a distance" (Anderson 2009: 23). In the perspective of cultural determinism, humans were seen as marionettes whose actions were determined by culture, being thus only passive "agents" of culture (Duncan 1980: 188). People were perceived as nothing more than "bearers of cultural habits and styles and the tokens of cultural traits such as 'national character'" (Wylie 2007: 28). Sauer believed that culture was the force shaping the landscape, but apart from the concept of the superorganic, he neither explained nor created a real definition of culture, for which he was criticized (Wylie 2007: 27–28). Thus, the natural landscape was becoming a cultural one through the modifications made by people as the "bearers" of culture. Every generation modified the landscape a little bit, superimposing elements of their own culture on the ones left by previous generations. Thus, for Sauer, the landscape was a palimpsest (Anderson 2009: 20). In Sauer's approach, investigation of the past focused on the documentation of material products of culture and the way they

The term possibilism, introduced by French geographer Paul Vidal de la Blache (1845–1918), was a very important concept which had been influencing archaeologists for a long time. For archaeologists who accepted possibilism, natural environment was not the most important and deterministic factor but rather one of many influencing factors, offering possibilities which could be used by people who were now perceived as active agents (Anderson 2009: 18). They did not reject the notion that the environment was influencing people but postulated that human will and activity were much more important factors which could change and reshape the environment. Through improvement of technical abilities people became less dependent on natural conditions, and although they were still part of natural order, they gained a margin of freedom which gave them the chance to be active agents (Mercier 2009: 148).

Both the environmental determinism and possibilism were questioned by the development of the concept of human agency. The turn to the notion of humans as thinking and conscious beings freed humans from the determining force of nature (and also culture). For Polish historian Jerzy Topolski (1928–1988), history is created by conscious human actions. Topolski underscored human activity as a force that shapes history. Human activities are not, however, performed in a completely free way. Actions of humans are limited by various elements. People act under particular circumstances, in already existing contexts. These contexts result from previous human actions and decisions. Humans are conscious beings and act on purpose; thus, in order to accomplish their goals, they must take into consideration the existing conditions. The knowledge about these conditions as well as a system of values influence human activity. Moreover, through these actions, humans create a ground for further decisions and actions (Topolski 1983: 213–214; Rączkowski 1997: 56).

Similar concepts were developed in sociology by Bourdieu, whose ideas were often implemented in archaeology. Bourdieu opposed the view that humans act freely and are completely conscious of their goals and that they are determined by society and passively reproduce its rules and laws. To overcome these two different views, Bourdieu created the idea of *habitus*. *Habitus* (plural: *habitus*) is a "system of durable, transposable dispositions, structured structure predisposed to function as structuring structure, that is,

changed the landscape. Thus, it "focused more on the products of cultures, rather than the processes that generated them, it centered on the shape, rather than the shaping of the landscape" (Anderson 2009: 23). This superorganic concept of culture can be criticized for "impeding explanation by masking many problematic social, economic, and political relationships" (Duncan 1980: 198).

as a principle of the generation and structuring of practices and representations which can be objectively 'regulated' and 'regular' without in any way being the product of obedience to rules, objectively adapted to their goals without presupposing a conscious aiming at ends or an express mastery of the operations necessary to attain them and, being all this, collectively orchestrated without being the product of the orchestrating action of a conductor" (Bourdieu 2007: 192–193). *Habitus* is a collection of past experiences, of knowledge about social and economic conditions as well as about the system of prohibitions and orders. *Habitus* is a structure passed down from generation to generation through the process of enculturation (through learning about social rules and behaviors), one of the important elements of which is material culture (Bourdieu 2007: 196; Hodder 1995: 97–98). Enculturation also means that people who live in similar social, economic, and ideological conditions have similar *habitus* since they share similar experiences. The similarity of *habitus* facilitates communication between people. *Habitus* gives humans dispositions, directions on how to behave in a given situation by referring to past experiences and knowledge (Bourdieu 2007: 198–199). However, *habitus* does not determine human actions completely; a human being is not passive and does not act mechanically. Practices are the "products of dialectic relation between the situation and *habitus*" (Bourdieu 2007: 196–197). *Habitus* generates practices but at the same time adapts them to a given situation (Bourdieu 2007: 196–197). These new practices also influence *habitus*; they restructure it and enrich it with new experiences, knowledge, and values. Thus, *habitus* not only works as a means of operation but is also the result of this operation (Hodder 1995: 100).

Humans themselves, and not the environment or other external forces, became thus the source of human actions. Humans were active beings while the environment was now perceived as a passive setting with certain conditions which could be used by humans depending on their *habitus*, knowledge, experiences, intentions, traditions, and economic and technological possibilities. Łowmiański (1898–1984) also stressed the importance of human activity as a factor shaping the settlement; he indicated that humans were the ones who were constantly changing and affecting the environment in many different ways. Various elements of the environment[9] could be exploited depending on the technological abilities, social conditions, and political relations (Łowmiański 1967: 14–15). Changes which occur in the environment, and are independent of human activities, such as changes

[9] Understood by Łowmiański as a set of conditions that can be used by people in an active, conscious way (Łowmiański 1967: 17).

in climate, topography, and hydrography, are "subjects of mechanical laws." Humans, in turn, are conscious beings that can shape the environment. The view that humans are the ones who influence the environment is defined as "human determinism," and it stands in opposition to possibilism and geographic determinism.

Jan Żak (1923–1990) shared the views of Topolski and Łowmiański, criticizing the approach in which settlement was investigated through the prism of the natural environment, where people were treated like other animals. This approach ignored the role of society and social awareness, while the environment was perceived as a factor determining the settlement. The result of such an approach was a simple description of the human–environment relationship (Żak 1985: 81). Żak opposed determinism and underscored human activity, which is visible in his understanding of settlement. He defines settlement as "a manifestation of socially conditioned human activity in a determined natural environment, results of which [are] relatively permanently connected with this environment through the process of habitation and at the same time utilization (consumption, processing and formation) of this environment" (Żak 1977: 421; translation in: Rączkowski 1997: 56). Furthermore, he pointed out that in the settlement pattern studies special attention should be paid to:

- the role of society in socio-organizational, social, and political terms which are the main determinants of the settlement process;
- the economy (its organization and technology) which has an influence on the settlement process dynamics;
- the role of awareness (for example, ideology, traditions, beliefs, knowledge) which can either advance or inhibit the settlement's process and form;
- the role of the natural environment as a relatively passive ground which can be changed in different ways depending on the above factors (Żak 1977: 423).

Rączkowski, like Żak, points out human activity as the factor shaping the settlement pattern. He writes that human activity "can be manifested in economic activity, as well as in forming social relations or a philosophy of life" (Rączkowski 1997: 57). Settlement pattern is the result of those three elements, and thus in any attempt to analyze it, attention should be paid to all of them.

The type of economic activity can highly influence the way in which humans function within a certain area. Łowmiański pointed out that important for the development of a social group is the moment when people can produce enough surpluses

to allow some of the members of the community to undertake other activities. This is a necessary step which allows for the creation of states and writing (Łowmiański 1967: 12). The other important element of the economy is craft specialization which can stimulate interactions between settlements. Self-sufficient settlements do not need to maintain relations with others unless other factors than economic ones are included. However, if given settlements specialize in certain areas of production, for example, one village produces pottery while another stone tools, then the relations between them can be maintained and intensified through exchange. Surpluses may also be used for exchange with other more distant villages and towns. Small villages producing agricultural surpluses may concentrate around larger settlements which can be used as markets for their products. Also, access to desired raw materials causes the intensification of relations with other locations. However, the long-distance exchange is restricted mainly to valuable goods and materials because of the high costs of transport. Trade routes, or routes of exchange in general, may be perceived as attractive locations for settlement[10] since they facilitate obtaining rare resources. Crossroads of such routes are especially valued. Large surpluses of grain and other goods produced and exchanged also require places for storage and some forms of administration and control (Trigger 1972: 579–592). Highly developed urban centers also require "administration to co-ordinate the various groups who inhabit them," for example, some registers of temple or palace staff or lists of soldiers might be needed (Trigger 1972: 587–589).

Social relations seem to be one of the most important elements shaping the settlement. For instance, egalitarian communities would rather build houses similar in size and construction. Communities that are hierarchical might manifest the social differences through architecture or other elements of material culture. The relations of power and dominance within the society may shape the settlement as well. Administrative buildings, palaces, and temples can occupy a separated area within the settlement, as it is often the case in large cities, for example, Nineveh, Assur, or Ur. The space of a settlement can be divided according to prestige and wealth; certain areas and places might be reserved for chosen, more prominent members of the community while the poorest

[10] River valleys, which are often occupied by people, may be chosen not only because they have easy access to water but because they can facilitate communication. People do not necessarily have to go by boat or raft on the river; they can also move on land along its banks. The river shows the direction, and settlements located along the river may be an advantage for travelers. The river can also make the transport of goods cheaper and faster, provided, of course, that people have the means of water transport, such as rafts, boats, ships, etc.

people might be pushed out to separate districts; however, it is not a rule, and houses of poor and rich people might be located next to each other. Also, the space of a house can be internally divided displaying the social organization (Pfälzner 1996) and division of labor between men and women (Bayman et al. 2012). The structure of family can be manifested through architecture as well, for example, buildings belonging to extended families might be larger and have a different ground plan and organization of space than those occupied by nuclear families (Stone 1996; Brody 2011). Conflicts and tensions between groups of people might lead to the creation of defensive structures, such as city walls, watchtowers, and forts. Intensive conflicts between communities can also cause a temporal abandonment of the settlement and a move to a different location that provides better protection or is hidden. Some political decisions can shape the settlement as well, for example, deportations of people from conquered lands to newly created villages or already existing places (Oded 1979) or the founding of cities by rulers, as was the case of Dur-Sharrukin (Khorsabad) which was built on virgin soil by Sargon II (van de Mieroop 2008: 240).

Besides these economic and social influences, there are also elements that have a more ideological or symbolic character. Traditions, religious beliefs, and perceptions of the elements of the surrounding natural environment can influence the way in which people arrange their settlements within a certain space. The value of particular environmental features depends on human perception and meaning ascribed to them. Thus, for example, features that can be regarded as barriers, such as lakes, rivers, forests, are barriers only when people use them in that way. A big river can be ascribed different meanings; it can be a barrier, a way of communication with other people, or it can have an even more mythological meaning (Rączkowski 1997: 56). Through the process of inhabiting a particular place or region, people ascribe meaning to it, with various notions and histories, which they repetitively use and modify. Some places within the landscape remain occupied for a very long period of time while others become abandoned or recurrently occupied. It might be related not only to the function of a settlement (city, village, camp, fort) but also to values and meanings given to that place.

Abandoned places can have a meaning as well. They do not necessarily disappear from the landscape; they can still be visible and play an active role in people's lives. Such places can be transformed and re-used again. Knapp and Ashmore point out that archaeologists are mainly interested in the time during which a monument was in active use and in the reasons behind its creation, "but the afterlife of monuments' remains is

under-appreciated. We forget that a seemingly abandoned monument is still part of an active landscape" (1999: 19). Remains of such monuments, old villages, or other kinds of past human activity in the landscape can still be visible. In the past, people observed the surrounding landscape and interpreted and used visible traces of the past to serve their own purposes and needs (Van Dyke, Alcock 2003: 1). The understanding of a place after its abandonment is not determined by its previous occupants but is created anew by the newcomers (Holtorf 1997: 50). Thus, the purpose and meaning of an abandoned place can change since they are conferred by people (Vedru 2015: 29). It is also possible that the purpose and meaning of a previously occupied site will be maintained by the new inhabitants. Preferences for the location of new settlements can also depend on the "previous human investment to improve the land for agro-pastoral activities." Such previously used land can be considered more attractive. Verhagen et al. write that the areas chosen for settlement in the later Roman period exhibited high heritage values. The researchers suggest that the "land use heritage seems to be a more important location factor for new settlement than the environmental context in most periods" (Verhagen et al. 2016: 633).

The recurrence of a settlement in a particular place or its constant occupation might be connected with the manifestation of identity or the legitimization of rights to the land. These two elements are related to one another and also to memory. Holtorf writes that "monuments are not places where memory is passively stored, but can be seen as stimuli, causing people to create a past by active remembering"[11] (1997: 50). People can use monuments and natural objects to create and collect memories. Tells, cemeteries (with visible marks), and burial mounds can function as links between the world of ancestors and the living. Such a connection with the past can be used to build a social identity and legitimize claims to the land (Holtorf 1997: 54).

The places valued for a long period of time, and often used for similar purposes because of that, are "the bearers of continuity, as well as the possible story connected with it" (Vedru 2015: 32). Memory gives people a sense of continuity, which might be maintained through re-use, reinterpretation or restoration, and reconstruction. Places valued as special in the landscape could be visually prominent landmarks, important transitions between ecological zones, or loci of some important events from the past. Such places can also be marked by, for example, rock reliefs, shrines, and temples or just by

[11] Traditionally, it was believed that memory is an archive, but it works rather by constructing than retrieving. Thus, memory creates the past rather than originates from it (Holtorf 1997: 49).

oral tradition. The status of significant places is maintained by people through the use of rituals, ceremonies, and symbols; in turn, those places create and express people's identity (Knapp, Ashmore 1999: 14–15). Identity can be also maintained by shared memories relating to places and territories or certain geographic features which might be connected with the origin of the community. The memory of a place(s) can define borders of an ethnic group and differentiate it from others. John Brinckerhoff Jackson,[12] an influential figure in human geography, saw landscape also as a symbolic resource where myths, imagination, symbolic values, cultural meanings, and memories were stored (Wylie 2007: 44).

The examples discussed above show that human decisions and activities related to settlement are multidimensional. Settlement preferences can be based on many different factors, such as the economy, subsistence, relation to water, communication and trade routes, social and political systems, the system of values and beliefs, traditions, the memory of a place, or simply the perception of a landscape's beauty. All of these elements might matter; thus, focusing only on one aspect of man's life would be an oversimplification.

The perspectives of Żak and Rączkowski are very similar. They are not deterministic approaches looking for general rules or laws guiding the settlement pattern; they underscore human activity and recognize the plurality of "lifestyles," variability, and multidimensionality of human decisions. They emphasize that it is not some external force that shapes the human settlement pattern, but that man himself is the architect of his fate.

The problems and difficulties with survey data

The problem of contemporaneity

The problem of contemporaneity has been noticed already by Adams (1965: 124) during his survey in the Diyala plains. He mentions that assuming the simultaneous occupation of all towns and villages during a given period prevents us from considering the probability of a sequential occupation of at least a few sites. Sites dated to the same period are usually treated as contemporaneous; thus, the size of the population is estimated and spatial analyses are conducted on the basis of the total number of sites per

[12] Later (in the 1980s and 1990s), Jackson's views spurred the approach to the landscape as a representation of cultural meaning and power relations as well as current phenomenological views (Wylie 2007: 50).

period. However, as has been noticed by Schacht (1984) and Dewar (1991), the "contemporaneity" of sites is problematic. Dating the sites on the basis of chronologically sensitive artifacts gives the impression that each site was occupied from the beginning to the end of a particular period (Dewar 1991: 604; Schacht 1984: 679). This is a synchronistic paradigm that "divides time into discrete segments. Each segment is treated as a homogeneous entity, with the culture being viewed as a static configuration from the beginning to the end of the period" (Schacht 1984: 678–679). As a consequence, the transition between two periods (differentiated on the basis of pottery) is viewed also as a change in settlement patterns (Dewar 1991: 605). Dewar (1991: 607) points out that it is important to keep in mind that "the presence of diagnostics allows identification of the use of the place at some point during a phase, but not throughout the phase." The founding and abandonment of a settlement do not necessarily correspond to the appearance of a new pottery style (Dewar 1991: 608).

Dewar (1991) tried to solve this problem by estimating the number of sites which were likely occupied at the same time during a particular chronological period. He considered three phases (Fig. 3): phase X, followed by phase Y, which is succeeded by phase Z, each distinguished on the basis of different ceramics. The moment of transition between phases X and Y is *t1*, and the moment of transition between Y and Z is *t2*. Thus, four types of sites could be defined for a given period of interest (here Y):

- *type a* – sites which yielded potsherds from phases X and Y; in other words, sites which had been established in the period preceding the period of interest and abandoned sometime during this period;
- *type b* – sites which yielded potsherds from all three phases; these sites are considered to have been established before the period of interest, to have continued to be occupied through the period of interest, and to have been abandoned during the following period;
- *type c* – sites which yielded potsherds from phases Y and Z; these sites had been established during the period of interest and abandoned sometime after the period of interest;
- *type d* – sites which yielded potsherds only from phase Y, meaning they had been established and abandoned within the period of interest.

The same site can be of a different type depending on the period of interest; for example, a site can belong to *type c* in period Y, but for period Z, it can change to *type a*

or *type b* (depending on whether there is pottery from the period following period Z). A site defined as *type b* for period Y will belong to *type a* in period Z if it does not yield potsherds from the period following period Z. It is important to mention that if archaeological data suggests the abandonment of a site at some point during a period (period X, Y or Z), then this information must be included, even if the site has pottery from two or three succeeding periods. For example, if a newly founded Ninevite 5 site also has pottery from the second half of the 3rd millennium BC, but the Ninevite 5 assemblage is represented only by early forms, then the site will not be regarded as a site of *type c* but of *type d,* since the pottery indicates a temporary abandonment between periods.

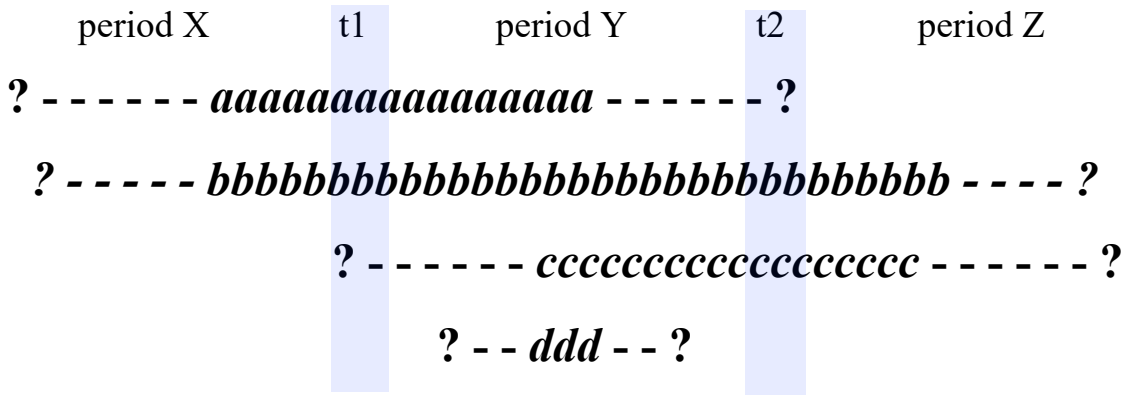

Fig. 3. Four occupation-span types of sites for hypothetical periods X, Y, Z (based on Dewar 1991: Fig. 3)

The model makes a few assumptions: first, that there is a "continuity of occupation from one phase into the next" if pottery from adjacent periods is present; second, that sites of *type b* are the only sites used through the period; third, that the rates of abandonment and establishment are constant through the period (Dewar 1991: 608).

It should also be pointed out that the transition points, *t1* and *t2*, are considered points in time when it can be precisely determined if a place was occupied. For example, if the site has pottery from the period of interest and from the preceding period, it is assumed that the site was occupied during the transition from the earlier period to the period of interest (*t1*). An analogous situation occurs at the transition point *t2* when it is assumed that the presence of pottery from the period of interest and from the following period indicates occupation during the transition between the period of interest and the later period. If a site has pottery only from the period of interest, it is unknown at which

point of the period the site was occupied. Thus, the minimal number of contemporaneously occupied sites at the beginning (*t1*) of the period is the sum of the number of sites of *type a* and *type b*, while at the end of the period (*t2*), it is the sum of sites of *type b* and *type c*.

Dewar used the Monte Carlo process[13] to estimate the number of settlements in use at a single point in time. First, he calculated the rates of abandonment and establishment by using two simple equations. Next, he used computer software (written by himself) to produce simulations of the settlement dynamics. The software takes into account the rates of establishment and abandonment and calculates the mean number of simultaneous occupations during a particular phase.

Dewar's model has, of course, some weaknesses. It cannot deal with multiple sequential occupations within a single period (Dewar 1991: 610). It means that the model assumes that sites of *type b* were not abandoned and reoccupied during the whole phase/period (Dewar 1994: 150). Also, in the case of sites of *type a* and *c*, it assumes that there was no abandonment between the two subsequent periods; otherwise, these sites would be qualified as *type d.* The number of *type d* settlements can highly influence the estimates of the number of simultaneous occupations (Dewar 1991: 610–611). The other weakness is that the calculated rates of the abandonment and establishment of sites are considered to be constant and true for the whole period, while in reality, they could differ throughout the period (Dewar 1991: 609). Moreover, while the model is trying to estimate the number of sites that were occupied at the same time, it does not show which sites are contemporaneous and does not give a synchronic settlement pattern (Dewar 1991: 610). Determining which sites were contemporaneous is possible only at the beginning of the period of interest (*t1*) and at its end (*t2*). The minimum number of contemporaneously occupied sites is equal to the number of *type b* sites, and the maximum number of contemporaneously occupied sites is equal to the number of sites dated to the period of interest. It must be kept in mind that the results of the application of this model do not lead to the reconstruction of the past reality but rather give an idea about the dynamics in the settlement pattern.

In his review of Dewar's 1991 article, Kintigh (1994) proposed to modify the model slightly by paying more attention to sites of *type d* (established and abandoned within a single period/phase). Dewar did not include the sites of *type d* in his simulation, while

[13] It is a method of mathematical modeling/prediction of complex processes. It is used, for example, on the stock exchange.

Kintigh did. Instead of using a computer simulation, Kintigh proposed to use mathematical equations to calculate the mean number of simultaneous occupations during a certain phase. First, the average number of simultaneously occupied sites in a certain period is calculated on the basis of the number of sites occupied at the beginning of the period (*type a* + *type b*) and at the end of the period (*type b* + *type c*):

$Occ_{abc} = 1/2[(a+b)+(b+c)] = b+1/2(a+c)$

Then the contribution of *type d* sites to the mean number of simultaneously occupied sites is estimated; first, based on the number of sites established during the period:

$Occ_{d+} = d[c/(c+d)]$

and then based on the number of sites abandoned during the period:

$Occ_{d-} = d[a/(a+d)]$

The mean value of these two results is then calculated:

$Occ_{d} = 1/2(Occ_{d+}+Occ_{d-}) = 1/2[cd/(c+d)+ad/(a+d)]$

The number of simultaneously occupied sites of all types derives from:

$Occ= Occ_{abc}+Occ_{d}$

Dewar's equations for the establishment (E_{Occ}) and abandonment (A_{Occ}) rates can be useful for further interpretations as well:

$E_{Occ}=(c+d)/p$

$A_{Occ}=(a+d)/p$

p = period's length in years

Kintigh's results of the equation for simultaneous occupations (for sites of *type a*, *b*, and *c*) differed slightly from the results obtained by Dewar's simulation. The difference is slightly bigger if the sites of *type d* are taken into consideration (Kintigh 1994: Table 2). Dewar's standard deviation and Kintigh's contribution of *type d* sites to the mean number of simultaneously occupied sites of *type a*, *b* and *c* were more or less similar. For example, among the sites from the Basin of Mexico dated to the EC period (which lasted ca. 350 years), there are 2 sites of *type a*, 1 site of *type b*, 8 sites of *type c* and 25 sites of *type d*. According to Kintigh's calculations, the mean number of simultaneously occupied sites without *type d* is 6.0; if *type d* is included, then the number is 10. Dewar's number of simultaneously occupied sites (calculated for *types a*, *b* and *c*) is 6.4.

Although the model has some weaknesses, I believe it can be useful for archaeologists since it helps to look at the settlement from the perspective of a dynamic process rather than treat all archaeological sites from a certain period as simultaneously occupied through the whole period which is obviously wrong. If the model is not applied,

the settlement looks very static, the distribution maps are overfilled, and the level of intensity of occupation might be overestimated. This can be significant especially when we compare periods of considerably different length and with significantly different proportions of occupation-span types (sites of *type a*, *b*, *c* and *d*). The division of sites into these four types helps to deal with the data. The proportion of these types can give us an idea about the various factors of settlement dynamics in the period of interest; it also provides some information about the ratio of establishment and abandonment, settlement stability and relocation. For example, the high number of *type d* sites in comparison to the other types may indicate regular relocations of settlements. In turn, the high number of *type b* sites indicates settlement stability. The minimum and maximum numbers of simultaneously occupied settlements are also important for the interpretation of Dewar's and Kintigh's results. I will use Kintigh's revision of Dewar's model since it pays more attention to sites of *type d* which usually constitute a considerable portion of identified sites per particular period.

The problem with survey data

Data obtained during an archaeological survey is not easy to interpret. The problems of its interpretation have been discussed in various publications (for example, Redman 1982; Ammerman 1981; Banning 2002). An archaeologist interpreting survey surface collection should be aware of the fact that the recorded sites, monuments and other permanent manifestations of human activity are just a part of the past landscape; they are the elements that survived, reappeared and were noticed and found.

In the case of Mesopotamia, the most easily noticeable archaeological sites are tells. They are visible on the ground as well as on satellite imagery (if the resolution is good enough). Thus, Near Eastern surveys are often focused on tells, whereas small and flat sites which are not visible from a distance, and which require more effort to be found, can be easily overlooked, especially if the survey is not intensive (which was already noticed by Philips, Ford, Griffin 1951: 309). As a consequence, smaller sites tend to be underrepresented in the survey data. This underrepresentation of small sites can be partly remedied by so-called transects, which are intensive field walking, and analysis of satellite imageries. The satellite imagery, if acquired in favorable conditions, can record traces of past settlements, which can be visible for example as brighter spots on the surface. Interviews with local villagers can also yield some information; people usually

know their fields quite well, and they can show the places where they have found potsherds or other kinds of artifacts.

It must also be remembered that the visibility of archaeological sites and hence also the results of the survey depend on the natural and human processes as well. The activity of rivers and streams might either cover some archaeological sites with alluvial deposits or wash away parts or even whole sites, for example, a large part of Tell Gomel was washed away by the Gomel river. Human activity may influence the visibility of archaeological data as well. For instance, on one hand, plowing and various kinds of activities related to building, such as bulldozing and digging, can erase an archaeological site from the landscape (as is the case of many sites covered now by the growth of the city of Erbil), but on the other hand, plowing can make flat archaeological sites visible by pulling out archaeological material from the cultural levels and bringing it to the surface where it can be noticed during field walking.

The results of an archaeological survey are also biased by the assumptions of the archaeologists conducting the research and survey methodology. For example, an assumption that people mostly occupied river valleys and so sites should be clustered along watercourses leads archaeologists to focus on them (for example, the Tell Brak survey by Eidem and Warburton [1996]), while areas between them remain uninvestigated.

The representation of chronological phases based on the surface material is also susceptible to various factors. Potsherds found at an archaeological site might not represent all periods of occupation; in the case of tells and multi-period sites, older layers might be obscured by later ones and thus not visible in the archaeological material. Bad state of preservation or lack of distinctive features of potsherds might cause underrepresentation of certain periods of settlement, as demonstrated by the case of Middle Assyrian potsherds from Wilkinson and Tucker's survey in the North Jazira (Wilkinson, Tucker 1995: 59–60). Ceramic phases cover long periods of time, and as a consequence, they can obscure the intra-phase variation of occupation at a certain site. The long duration of ceramic phases can create an impression of settlement stability (see "The problem of contemporaneity"), while in fact, the site might have been recurrently

occupied within the phase. The observed change of pottery style may also give an impression that a particular phase ended abruptly.[14]

It is also difficult to determine the size of a settled area in each period. The pottery is usually collected from certain, more or less square, areas, and on the basis of potsherds, it is assumed later that these areas were settled during a certain period. Then the areas are added up to determine the surface of the whole settled area during a certain period. However, such measurements are very inaccurate since post-depositional processes are disregarded, and collection areas often do not cover the whole site. Moreover, in the case of some sites, usually small ones, potsherds can be collected from the whole site, without subdivisions into collection areas. Thus, I decided not to focus on the size of the settled area during each period; however, in the event of precise data being available, it would be interesting to take the settled area into account because in some periods it might increase even if the number of sites drops.

Interpretation of survey data

The analysis of settlement pattern on the basis of survey data encounters a number of problems and difficulties. First of all, it is necessary to mention that we only have points and limits of sites on the map and their general chronology. Secondly, the situation could be remedied by conducting test excavations which could provide additional information about the settlement sequence and the character of the settlements. Test excavations could also enhance our knowledge about pottery in the UGZAR region. Finally, without stratified information about some artifacts which could have been objects of exchange, it is impossible to determine to which occupation period at the site they belong, as is the case with obsidian found on sites occupied for more than one period.

In my understanding of settlement, I follow the definition created by Jan Żak (mentioned above) that the settlement is "a manifestation of socially conditioned human activity in a determined natural environment, results of which [are] relatively permanently connected with this environment through the process of habitation and at the same time utilization (consumption, processing and formation) of this environment" (Żak 1977: 421, translation: Rączkowski 1997: 56). The settlement is created by human

[14] In the case of Copan, the Classic Maya site in western Honduras, an obsidian hydration dating undertaken on a massive scale during the settlement survey and extensive excavations showed that the collapse was not so abrupt as it was previously interpreted on the basis of the pottery (Webster, Freter 1990).

activities; all the elements that are the results of these activities and are permanently connected with the environment form part of the settlement. Thus, not only villages and cities are regarded as elements of the settlement but also roads, graveyards, bridges, field systems, canals, etc.

The interpretation of the settlement patterns requires taking into consideration various factors that influence them. Żak mentioned four that are of utmost importance: the role of society in socio-organizational, social and political terms; the economy; the role of awareness (for example, ideology or socio-psychological factors); the role of natural environment (but understood as passive and modified by man). Rączkowski, however, mentions only three elements that influence the settlement: economic activity, social relations, and philosophy of life, and excludes the environment as an influencing factor. I will try to consider all of these factors as much as possible.

In my interpretation, I will refer to the data acquired during several research projects, mainly surveys undertaken in the neighboring areas, and to the results of excavations conducted at archaeological sites located in the vicinity of the UGZAR area. I will consider mainly the area of northern Iraq, but when the data from this area is scarce, I will also include information from the sites located in north-eastern Syria, in the Khabur basin.

Each chapter describing a particular period will include parts referring to the three elements shaping the settlement: the economy, social relations, and philosophy of life (following Żak and Rączkowski, cf. above). These elements, which are interconnected and influence each other, are the results of human activity. The data obtained from the excavations can give some clues as to the daily activities undertaken at the settlements during a certain period. The forms of constructions found at the sites can indicate, for example, whether the village was engaged in some kind of craft specialization. Some of the buildings, for example, temples and public buildings, could have been used in economic, social, and ideological spheres. At some of the sites also analyses of plant remains and animal bones were done. Their results inform us about the subsistence strategies occurring at a particular site but could be perhaps extrapolated to the whole period. The raw materials brought from near and far can give us a picture of how extensive were the contacts, direct or not, that the local communities maintained. The objects brought to the site from other areas can release people's curiosity and creativity since the new item must be ascribed with meaning. These, in turn, can lead to some changes within the community; especially if the object is considered valuable, it might raise the prestige

of the owner. The data from cemeteries can indicate some social differences between members of the community which could have been visible to all of them during the funeral, although it must be kept in mind that burial practices are the result of many various factors, such as beliefs and traditions. Depending on these traditions and beliefs, the social status might be emphasized or hidden by the burial practices.

I would like to check as well for patterns of a recurrent occupation of some places. Some sites can be continuously occupied while others are reused repeatedly or only once. The choice of places which have already been settled in the past might be related to the construction of identity by appropriating the past. The continuous occupation of a certain place might be connected to its special location, for instance, at the intersection of communication routes. For example, a tell in the city of Rovia (US025) has a 6-millennia-long occupation; even today, the town still constitutes a very important point on the map as it is located at the intersection of communication routes.

The changes in settlement dynamics, the rates of abandonment and establishment can indicate some differences in the utilization of land, for example, a shift from sedentary to more mobile lifestyle or coexistence of these two ways of life. For this reason, I will apply Kintigh's revision of Dewar's model which allows to overcome the "synchronistic paradigm" and thus trace diachronic changes in the settlement. I would like to compare these results to the surveys undertaken in the regions of Tell al-Hawa and Tell 'Afar to see whether the settlement patterns are similar or different.

As far as the environment is concerned, I would like to treat it as a source of potential resources that can be variously used by people depending on their economy, social relations, knowledge, views, and traditions. Łowmiański points out that humans depend on nature but "the selection of this or other form of environmental use depends on the invention of a given social group" (Łowmiański 1967: 13). Thus, for example, people need water to live, but the way of obtaining water depends on their activities, on their knowledge and capabilities, on their other needs such as, for example, the need for defense during unstable times, and also on other elements influencing the decision about the location of a settlement like, for example, traditions and beliefs. The decision about the settlement location is not based on one factor only; it is the result of various elements combined together.

Chapter 3: Settlement patterns

Period 1 – Proto-Hassuna and Hassuna

The region of northern Iraq forms a part of the area where Neolithic[15,16] cultures appeared for the first time. The Neolithic period in this region started ca. 10 000 BC and lasted till ca. 5300 BC when the Early Chalcolithic Ubaid culture began. This early stage of the Neolithic was the time when food production began. The communities changed their lifestyle from hunter-gatherers to farmers, although hunting remained an important part of subsistence also in later times (at least at some settlements). Among the sites dated to the Pre-Pottery Neolithic one can mention Nemrik (Kozłowski 1989), M'lefaat (Braidwood, Howe 1960; Kozłowski, Kuźma, Szymczak 1993), Qermez Dere (Watkins, Baird, Betts 1989), Ginnig (Campbell, Baird 1990), Jarmo (Braidwood 1952; Braidwood, Howe 1960), and Tell Maghzaliyah (Bader 1993c).

The Hassuna period represents, together with the later Halaf culture, the Pottery Neolithic (or Late Neolithic) in the region. The period was named after the site of Tell Hassuna, located on the right bank of the Tigris, some 32 km south of Mosul. Braidwood assumed that there was a continuity between Jarmo and Hassuna, visible in the continued architectural development; however, the differences between the flint and ground stone industry at these sites may indicate a gap between them (Braidwood, Howe 1960: 161–162). Umm Dabaghiyah, which is earlier than Hassuna, is interpreted as a "bridge" between Jarmo and Hassuna or as "an early facet of Hassuna." Umm Dabaghiyah's upper

[15] Important investigations of prehistoric sites took place already during the first half of the 20th century. In 1928 the Joint Expedition of the American School of Prehistoric Research and the Percy Sladen Memorial Fund began investigations in the region of Sulaimaniyah, where the caves of Hazar Merd and Zarzi yielded remains of Mousterian and Upper Paleolithic (Garrod 1930). In April 1950 Henry Field (Peabody Museum Harvard University Expedition), accompanied by Dennis Batten, conducted an archaeological survey of Jebel Baradost in the Rawanduz area (Field 1951); in the framework of this project, Ralph Solecki discovered in 1951 the Shanidar cave where he found traces of first burial rituals (Solecki 1971). The transformation of lifestyle, from a cave to a village, was investigated as part of The Oriental Institute Iraq – Jarmo project initiated by Braidwood (Braidwood, Howe 1960). The project registered many archaeological sites, representing even earlier periods than Pre-Pottery Neolithic. All of these projects demonstrated that the area had been inhabited for a very long time.

[16] At present, the Central Zagros Archaeological Project operates in northern Iraq, focusing on the process of neolithization, plant and animal domestication, and the beginnings of sedentary settlement. The project has excavated two sites: Bestansur and Shamshara (Matthews et al. 2016).

four phases are similar to Hassuna's layer Ia, Gird Ali Agha, and basal levels of Matarrah (Kirkbride 1972: 12; Kirkbride 1982: 13). Mortensen suggests that the pottery[17] found at Tell Shamshara, which appeared quite late at that site, was the result of contacts with the Hassuna villages located on the North Mesopotamian plain (Mortensen 1970: 120). Tell Sotto provides in its lowest levels, which are also younger than Yarim Tepe I, some parallels to Umm Dabaghiyah, for example, large-scale architecture (Bader 1993a: 45). Tell Sotto shows some similarities to Yarim Tepe I as well and may constitute another "bridge" between Jarmo and Hassuna. The similarities are visible in the pottery decoration as well as in the presence of stone beads and bracelets, and stone axes (Bader 1993a: 48–52). Tell Sotto has yielded some peculiar sherds, "which have a rich, dark, cherry color on the surface and in section . . . are tempered with shell and have a burnished surface" (Bader 1993a: 45); similar sherds have been found at Yarim Tepe I. This kind of pottery is rare at both sites, and Hassuna pottery is typically organic tempered. Similar pottery (black and red burnished thin-walled pottery, with sand or shell temper) was present also at the early agricultural sites of Anatolia: Mersin, Çatal Hüyük, Sakçe Gözü (Bader 1993a: 45–46). Kirkbride (1972: 13–14) links Umm Dabaghiyah with the cultures of the west,[18] but Bader believes that Tell Hassuna, Tell Sotto, and Umm Dabaghiyah[19] are representatives of a single cultural sphere of local early agriculturalists (Bader 1993a: 46–48).

It should be stressed that there was diversity in the settlement patterns, subsistence, and generally in the way of life. In Iraq, settlements of the Pre-Hassuna and Hassuna periods seem to have been simple villages, permanent or seasonal, or campsites. But for example, in Syria, in the Balikh region, site Tell Sabi Abyad represented a slightly different pattern. In its early phases (levels 8–10), more or less contemporary to Umm

[17] Mortensen writes that Fine, Standard, and Coarse Ware from Tell Shamshara are "in general related to the contemporary ceramic wares on the North Mesopotamian plain" (Mortensen 1970: 120). The Hassuna pottery from Tell Shamshara is related to the pottery found at Tell Hassuna (Mortensen 1970: 84–85, 106), while "the designs of Samarra Painted Fine Ware all belong to the classical Samarran style repertoire as it is known from many sites in Northern Mesopotamia" (Mortensen 1970: 66). The Samarra Painted Standard Ware is interpreted as a local variant of the Samarra Painted Fine Ware which "can hardly be local." The Standard and Coarse Wares (both Hassuna and Samarra) are interpreted as local, while the Fine Wares as imported (Mortensen 1970: 118–120).

[18] According to Kirkbride, the earliest remains at Umm Dabaghiyah do not find good parallels in Iraq. Kirkbride indicates that the site should have its origins in the north and north-west, in the region of the Mardin and Khabur watersheds, as suggested by the presence of northern architectural elements: access to the roofs, exterior ovens, and plastered walls decorated with painted elements (Kirkbride 1982: 12–17).

[19] Tell Matarrah shows some similarities to the four upper phases of Umm Dabaghiyah, Jarmo, and Gird Ali Agha but its culture is interpreted by Braidwood as "somewhat impoverished southern variant of the Hassuna" (Braidwood et al. 1952: 67). All of these sites have yielded side-blow blade-flakes (Braidwood, Howe 1960: 36, 38, 45; Braidwood et al. 1952).

Dabaghiyah, Tell Sotto, and Kültepe (Akkermans, Schwartz 2003: Fig. 4.2), the site featured different pottery, described as belonging to a Pre-Halaf phase. In the later phases (6–4 – "transitional" between the lower Pre-Halaf Neolithic and the topmost Early Halaf, more or less contemporary to Hassuna and Yarim Tepe I), the village was formed of buildings composed of many cubicles. The village was destroyed by fire, and plenty of stamp seal impressions on clay have been recorded among its burnt remains. The above-described buildings are interpreted as granaries and storehouses (Akkermans, Schwartz 2003: 112; Akkermans, Verhoeven 1995: 21–25). The pottery found in the Burnt Village at Tell Sabi Abyad finds parallels in coastal Syria and south-eastern Turkey. The painted Fine Ware showed some similarities to the Samarra painted pottery tradition of southern Iraq and, according to Akkermans and Verhoeven (1995: 20), perhaps also to Hassuna. Sabi Abyad shows that the Halaf culture was not brought by some foreign people but has gradually developed locally. Akkermans and Verhoeven pointed out that "the Iraqi part of the Jezirah have yielded ceramics that are virtually identical to the transitional wares found in the excavation at Sabi Abyad" (1995: 21), suggesting that sharing of cultural traits, communication, and interaction within the region existed before the Halaf period proper (Akkermans, Verhoeven 1995: 21).

Settlement structures

The excavated sites yielded various structures, some of which had quite an elaborate plan. There was no ground plan which would have been characteristic of more than one settlement, and, moreover, architectural types at the sites were changing with time. On some of the excavated sites located in northern Iraq, no architectural remains have been found.

Some very early structures, like the ones at the Proto-Hassuna site Umm Dabaghiyah, were single-roomed buildings with an irregular plan, built of packed mud or *tauf*. Slightly later structures were more rectangular and consisted of one or two rooms (Kirkbride 1972: 6). Besides these simple constructions, buildings with a more complicated ground plan were discovered as well, like in the case of Tell Sotto where some quite large houses consisting of several rooms were found in the lowest levels. Some areas of the houses could have been intended for storage, while others, containing ovens, could have been used as kitchens. Outside the buildings, storage jars embedded in

the ground, ovens, and devices for drying grain have been found, suggesting that a large part of daily activities was conducted outside (Bader 1993a: 45).

Remains of a large structure have been found in the lower levels of Kültepe[20] (however, it has not been fully excavated). It was a rectangular building with associated storage facilities (Bader 1993b: 56–58). Similar large buildings (probably used for storage as well), composed of many rectangular cubicles, were also found at Umm Dabaghiyah. The buildings were grouped around a courtyard. Buildings similar to the ones found at the Proto-Hassuna sites appeared also slightly later; parallels were encountered in the lower levels of the later Hassuna period at Yarim Tepe I (Kirkbride 1973b: Pls LXXVII, LXXVIII; Kirkbride 1982: 16).

Domestic structures from the Hassuna period were quite simple. Tell Hassuna seems to have been settled at the very beginning by herdsmen and hunters (Lloyd, Safar, Braidwood 1945: 262) who were living in small shelters that left no architectural remains. Traces of woven reed matting have been found, along with a lot of artifacts scattered on the usage surfaces. The earliest domestic structures were built of adobe and comprised a single room. At Tell Hassuna, only one of the buildings was circular (it was of a domestic character), while in the lowest levels of Yarim Tepe I such round structures, occurring together with small one-room buildings, were more common. Each room was equipped with a bread oven, storage jars, and grain bins (Lloyd, Safar, Braidwood 1945: 271–272; Merpert, Munchaev 1973: 100; Merpert, Munchaev 1987: 4–7). In the later phases of the period, both settlements displayed more elaborate planning of the buildings. At Yarim Tepe I, the buildings were separated by passages or small courtyards plastered with gypsum, which only later, as the population grew, were incorporated into the structures to enlarge the living or functional space (Merpert, Munchaev 1973: 96–98). At Hassuna, the structures of the later levels showed signs of planning as well; rooms were grouped around a courtyard, and some of the houses were quite large. Some walls had also buttresses to strengthen them (Lloyd, Safar, Braidwood 1945: 275). A four-room building and some pits dug into virgin soil (some of them containing ovens) have been found in the basal levels of Telul eth-Thalathat (Thompson 1969: 75).[21] The upper phases of Matarrah (characterized by the presence of Samarra pottery) yielded houses which

[20] The site is located 6 km to the west of the Yarim Tepe sites.
[21] The chronology of the lowest levels of Telul eth-Thalathat is unclear. The excavators have suggested that the material from the basal levels was related to Matarrah. However, there is no painted or incised pottery in these levels, which are overlaid by the Ubaid levels, and thus they might have been contemporary either with the Hassuna, Hassuna/Samarra, or Halaf periods (Thompson 1969: 75–76).

consisted of four to six rooms with walls made of mud or *tauf*. In one of the houses, a horseshoe-shaped oven was found (Braidwood et al. 1952: 6–7).

Not all excavated sites have yielded traces of architecture, for example, Gird Ali Agha,[22] Tell al-Khan, Tell Shamshara, Nineveh, and the earliest levels of the already mentioned Tell Hassuna. At Tell Shamshara, only storage basins and ovens have been found; however, in the pre-ceramic level 16, there were remains of mud-wall architecture. There were also concentrations of boulders which might have been used as foundations of walls uncovered in levels 15–14 (Mortensen 1970: 17–23). In the Ninevite 1 level at Nineveh, traces of huts have been found in the form of decayed wood and ashes which indicated a settlement (Thompson, Mallowan 1933: 134; Perkins 1949: 10).[23]

The assemblage found at the settlements from the Hassuna period reflects daily activities undertaken by the people living there. Tools such as mortars, grinders, querns, and pestles have been found at many sites; there were also spindle whorls and tools made of bone, flint, and obsidian. The artifacts repertoire at Yarim Tepe I included knives and sickle blades[24] made of flint and obsidian, as well as stone hoes. At Tell Hassuna, already in the early levels there appeared also other elements of equipment used in agricultural societies like stone hoes (mainly made of quartzite), followed later by sickle blades (Braidwood, Howe 1960: 36–38; Kirkbride 1972: 8; Lloyd, Safar, Braidwood 1945: 262; Merpert, Munchaev 1973: 105; Merpert, Munchaev 1987: 15; Bader 1993a: 45).

There is also evidence suggesting local pottery production – two large two-stage kilns have been found outside the houses at Yarim Tepe I (Merpert, Munchaev 1993e: 85). Such large manufacturing facilities may indicate some specialization and production of pottery on a bigger scale than just for personal use. The pots might have been objects of exchange.

[22] Gird Ali Agha is a small site located on the eastern bank of the Greater Zab. The site was discovered by Braidwood. Short excavations at the site revealed at least three "floors" (compacted earth layers) with traces of charcoal but no traces of post-holes or *tauf* walls. There were some pits with almost vertical sides, but it is not certain whether those pits were pit-houses or were rather related to farmyard activities. The limited area of the soundings makes it difficult to determine the general character of the settlement (Braidwood, Howe 1960: 37–38).

[23] There may be various reasons for the lack of architectural remains; either the structures were built of perishable materials, like at the early level of Tell Hassuna, or the excavations were conducted in empty areas or were just not long enough. At Tell al-Khan, for example, a British tank-trap cutting through the site was used as a test trench and yielded only potsherds, stone tools, fragments of pestles and milling stones (Braidwood, Howe 1960: 35).

[24] Predecessors of blade tools from Yarim Tepe I have been found in the lowest levels of Tell Sotto and Umm Dabaghiyah (Merpert, Munchaev 1987: 15).

Procurement of raw materials and contacts with other regions

Objects of material culture from the Hassuna period demonstrate that the people of these early settlements were not isolated in their own small communities and the area surrounding them but had some contacts with even quite far-away regions. Despite the peripheral location of Umm Dabaghiyah, the site shows evidence of contacts with other regions. There are no sources of stone in the area, apart from the valleys of seasonal streams; thus, most of the raw materials had to be brought from distant places[25] (Kirkbride 1974: 89; Kirkbride 1973a: 6–7; Kirkbride 1982: 18–19). Hard stone, mainly basalt used to make axes, was imported as well (Kirkbride 1972: 8). Shells found at the site are of eastern origin, probably from the Gulf.

Artifacts found at other sites also indicate the existence of contacts with other regions. Yarim Tepe I and Tell Hassuna have yielded some beads/pendants made of precious stones like turquoise (rare material in Iraq in the early periods) and rock crystal, as well as objects made of other materials such as seashells, copper and lead, limestone, diorite, and other unidentified stones, which may suggest exchange relations with

[25] While southern Mesopotamia was poor in stone material in general, low-quality limestone, gypsum, and sandstone were locally available. Granite could have been obtained from the Arabian Desert. In the north, in the Amanus-Taurus-Zagros mountains, various kinds of stone occur such as limestone, calcite, gypsum, sandstone, and shale. In the core area of Assyria, Mosul Marble ("alabaster") is abundant. Deeper in the Zagros, there also occur harder stones such as granite, marble, quartz, schist, and serpentine (Moorey 1994: 21). Steatite/chlorite is available in Iran and Oman, where also diorite and olivine-gabbros are present (Moorey 1994: 21). At Tepe Yahya located in southern Iran (in the Soghun valley, ca. 200 km south from Kerman), the production of chlorite vessels started in the early 3rd millennium BC (the site displays a corpus of material that shows some parallels with Mesopotamia – large buildings, tablets, seals, and beveled rim bowls). The chlorite vessels produced at the site find parallels in some examples from Mesopotamia, south-western Iran, and the Persian Gulf (Kohl 1975; Lamberg-Karlovsky, Tosi 1973: 35, Chart 1). On the basis of a detailed art historical analysis and chemical and physical methods, Kohl (1975) determined several centers of production. Some of the vessels might have been made from sources obtained in Tepe Yahya or east of Yahya. Others could have been made from chlorite which might have occurred (although it has not been documented) in the Sanandaj-Sirjan orogenic belt, which extends through the Zagros mountains in western Iran. And the last group of vessels might have come from Oman (Kohl 1975: 29–30; Kohl 1976: 74). Diorite could have been obtained also from Syria (Moorey 1994: 37). Apart from the presence of basalt in the neighborhood of Tepe Gawra mentioned by Tobler, Layard also wrote that basalt was abundant in the Kurdish hills and in the Taurus mountains where Euphrates and Tigris enter the plain (Moorey 1994: 21–22). Potential sources of carnelian and hematite occur in Turkey and Greater Iran (Moorey 1994: 23). Agate could have been obtained from Iran (Moorey 1994: 37). Its sources have been found also in the region of Ankara (Hatipogly, Babalik, Chamberlain 2010: 131, Fig. 18). Rock crystal is available in Iraq, Turkey, and Iran (Moorey 1994: 38). Turquoise occurs on Sinai, in Iran, in the inner Kizil Kum desert (south of the Aral Sea), and in Afghanistan (Moorey 1994: 101–103), of which Afghanistan and perhaps Iran seem to be the most probable sources. Amethyst does not occur in Mesopotamia. It is probable that it was brought from Iran (Moorey 1994: 94). Its sources are reported also in north-western Turkey in the Balikesir province (Hatipogly, Babalik, Chamberlain 2010: 125, Fig. 12). Lapis lazuli was imported from Badakhshan in Afghanistan (Moorey 1994: 85–87; Herrmann 1968: 22–27). A workshop producing objects of lapis lazuli, carnelian, turquoise, and alabaster has been found in Shahr-i Sokhta (3rd millennium BC) in Iran. More than 90% of lapis lazuli and carnelian found at the site were waste flakes (Lamberg-Karlovsky, Tosi 1973: 27).

Anatolia, the Mediterranean coast, the Arabian Peninsula, and other regions of Iraq (Lloyd, Safar, Braidwood 1945: 269, 289; Merpert, Munchaev 1987: 19).

Obsidian has been found at many Hassuna sites including Nineveh (Perkins 1949: 9), Matarrah (Braidwood, Howe 1960: 36–37), Yarim Tepe I (Merpert, Munchaev 1987: 19), Tell Hassuna (Lloyd, Safar, Braidwood 1945: 262), and Umm Dabaghiyah (Kirkbride 1982: 18).

The earliest use of obsidian in the area of northern Iraq is evidenced in Shanidar (layer C), dated to 30 000 BP. Some of the obsidian came from Nemrut Dağ (in the Lake Van area) which lies ca. 300 km to the north-west, and the easiest route there leads through the region of Hakkari (where a Middle Paleolithic site Yüksekova with obsidian industry is located). Obsidian from Nemrut Dağ has been found also in the Zarzi cave, at Matarrah, and Jarmo (Renfrew, Dixon, Cann 1966: 39–44). Some other sources of obsidian were used as well; in the case of Shanidar, they were located further north in the region of Kars or west in Acigöl in Cappadocia (it is impossible to distinguish between these two sources). In the 7th and 6th millennia BC, obsidian from the area of Lake Van was found even on sites located further south such as Sarab, Tepe Guran, and Ali Kosh (Renfrew, Dixon, Cann 1966: Fig. 5). At Tell Shamshara, most of the obsidian came from as yet unidentified source in the area of Lake Van (Renfrew, Dixon, Cann 1966: 40). The obsidian artifacts made up 80% (which is a very high rate) of the total chip stone industry at Tell Shamshara (Mortensen 1970: 139–142). Jarmo has also yielded some obsidian coming from another source in the area of Lake Van.

Food sources – land use

In the Hassuna period, people based their subsistence on a combination of agriculture and animal husbandry; however, hunting was still practiced. Remains of plants collected at Yarim Tepe I included grains of domesticated wheat (*Triticum aestivum*, *Triticum spelta*) and multi-row barley (*Hordeum vulgare*) which was the principal crop; at Matarrah, two-row barley was found; Umm Dabaghiyah yielded domesticated barley (*Hordeum vulgare var. nudum*, imprint of the lemma) and domesticated emmer (*Triticum dicoccum*, imprints of glumes and inner dorsal husks, and there was also one spikelet fork with one glume base preserved), a little bit of lentil, and pea (no mention whether domesticated) (Braidwood, Howe 1960: 37; Helbaek 1972: 18;

Kirkbride 1972: 6; Merpert, Munchaev 1973: 106–107; Bakhteyev, Yanushevich 1980: 168–171).[26]

Animal husbandry and hunting constituted another source of food. At Yarim Tepe I, there is evidence of consumption of wild and domesticated animals which confirms that its inhabitants were engaged both in animal husbandry and hunting. Of the animal remains, 82% belonged to domestic species, namely cattle, sheep, goat, pig, and dog. Wild species were represented by boar, Persian fallow deer, wild goat, leopard, onager, gazelle, and golden jackal (Merpert, Munchaev 1973: 106; Merpert, Munchaev 1987: 19). At Tell Hassuna, the remains of sheep and/or goat (no mention whether wild or domesticated) were the most numerous among the animal remains. The wild animals' bones represented such species as toads, rats or their close relatives, hare, ass, and also boar (Lloyd, Safar, Braidwood 1945: 284).

In the case of faunal remains at Umm Dabaghiyah, of interest is that domesticated animals (cattle, sheep/goat, pig, dog) represented only 9.77%–13.23% of the total of animal remains. Although the inhabitants of Umm Dabaghiyah kept domesticated animals, hunting, mainly of onagers, was still the most important source of meat (Bökönyi 1973: 9–11). The onagers' bones (none of them showed any traces of domestication) represented 65.92%–69.67% of the assemblage depending on the level. Umm Dabaghiyah was most probably a seasonal site and is interpreted as "a storage point for a semi-nomadic group involved in the exploitation of onagers and gazelles" (Akkermans, Schwartz 2003: 127).

Most of the sites have been found within the rain-fed zone which allowed the cultivation of crops. However, the example of Umm Dabaghiyah shows that the existence of settlements, although probably seasonal, was also possible on the margins of the rain-fed zone thanks to the implementation of different ways of land use. The people of Umm Dabaghiyah must have seen potential in this area for their subsistence. It seems quite likely that there were other settlements like Umm Dabaghiyah, which specialized in the hunting of certain species or represented other unconventional modes of subsistence.

[26] No grain was mentioned in the report from the excavations at Tell Hassuna (Lloyd, Safar, Braidwood 1945: 257, Chart I).

Burial customs

The Hassuna graves excavated so far represent various and complex burial customs. The burials of adults found within the settlement's limits were rare and always ambiguous. At Tell Shamshara, a single child's grave was found (Mortensen 1970: 20), and at Umm Dabaghiyah, only juvenile burials occurred (Merpert, Munchaev 1993c: 207), which suggests that the area of the settlement was reserved mainly for the burials of juveniles. Several of the juvenile burials at Yarim Tepe I and Tell Sotto were placed in large vessels. There were also burials of infants deposited under the walls, corners, floors, thresholds, and hearths of houses or in large vessels. The dead lay in a flexed position and were sometimes equipped with vessels and ornaments. Adult burials have been found only occasionally, and they cannot always be considered as primary. Inside one of the round structures at Yarim Tepe I, miscellaneous bones of two or three adults were found; in two rooms of another building there were also remains of adults – one of the skeletons was incomplete, and the other was dismembered (Merpert, Munchaev 1993c: 208; Merpert, Munchaev 1987: 8–9). At Tell Hassuna, one burial of an adult or adolescent was found beneath the floor of one of the rooms. Remains of two adults were found in a grain bin. The dead were thrown unceremoniously inside; one of them was missing a head. There were also human bones in opposite corners of one of the rooms. While adult burials were few, there were a dozen infant burials in pottery jars, some of them accompanied by ceramic vessels (Lloyd, Safar, Braidwood 1945: 267–268).

Settlements' distribution and dynamics

Ibrahim[27] (1986) has noted 28 sites with Hassuna and/or Samarra pottery (Fig. 4), most of which (23) were located in the region of Tell 'Afar,[28] one was in the vicinity of Tell Hassuna and four near Hatra. The relation between sites with Hassuna and Samarra pottery is quite interesting. Hassuna and Samarra pottery occurred together at 10 sites, while 27 sites had only Samarra and 11 only Hassuna pottery. The sites which yielded only Samarra pottery were located exclusively in the region of Tell 'Afar (which was

[27] Ibrahim's survey covered a large area of northern Iraq between the Tigris and the border with Syria, but the early sites were recorded mainly in the region of Tell 'Afar.

[28] Some of the sites listed by Ibrahim had been previously identified by Seton Lloyd during an archaeological survey of the Sinjar district undertaken by the Institute of Archaeology of the University of Liverpool in the spring of 1938. The team discovered 78 archaeological sites which were published in a small catalog (Lloyd 1938) with a short description of the more important ones.

later a crossroad of trading routes[29] leading east–west and north–south). Slightly less than half of the Hassuna/Samarra sites were abandoned within the Hassuna period, but the majority had also pottery from the Halaf period, so perhaps these sites were occupied continuously or were repeatedly resettled. According to Kintigh's formula (Table 3), the average number of contemporaneously occupied settlements varied between ca. 7 and 11 (depending on whether we include sites of *type d* or not). However, it must be kept in mind that in the case of periods where the number of sites of *type a* is unknown (and where there are no sites of *type b*), the average number of contemporaneously occupied sites is underestimated, since in this situation the basic equation refers only to sites of *type c*. The other problem is the fact that Ibrahim does not give more detailed information about Hassuna and Halaf pottery (he does not mention whether it was Proto, Archaic, or Standard Hassuna, and Early or Late Halaf); thus, there is no certainty about the occupation continuity at sites which have both Hassuna and Halaf pottery. In consequence, the results of these calculations should be treated with extreme caution.

A large concentration of sites dated to the Hassuna/Samarra period was found in the region of Tell Abu Maria (to the east of Tell 'Afar) during a survey carried out by the British School of Archaeology in Iraq. Of 138 sites surveyed, 56 yielded prehistoric material, while Hassuna or Samarra pottery was encountered on 23 of them (Oates 1968: 12).

Table 3. Hassuna-period occupation in the Tell 'Afar region

a	*b*	*c*	*d*	Occ_{abc}	Occ_{d+}	Occ_{d-}	Occ_{d}	*Occ*	*Min. no of sites at period's*		*p**	E_{occ}	A_{Occ}	*Total no of sites*
									beginning	*end*				
0	0	15	12	7.5	6.67	0	3.33	10.83	0	15	600	0.045	0.02	27

Table 4. Hassuna-period occupation in the Tell al-Hawa region

a	*b*	*c*	*d*	Occ_{abc}	Occ_{d+}	Occ_{d-}	Occ_{d}	*Occ*	*Min. no of sites at period's*		*p**	E_{occ}	A_{Occ}	*Total no of sites*
									beginning	*end*				
0	0	20	24	10	10.91	0	5.45	15.45	0	20	600	0.073	0.04	44

[29] Tell 'Afar was perhaps a station called "Ad Pontem" in the Tabula Peutingeriana (Palermo 2015: 134).

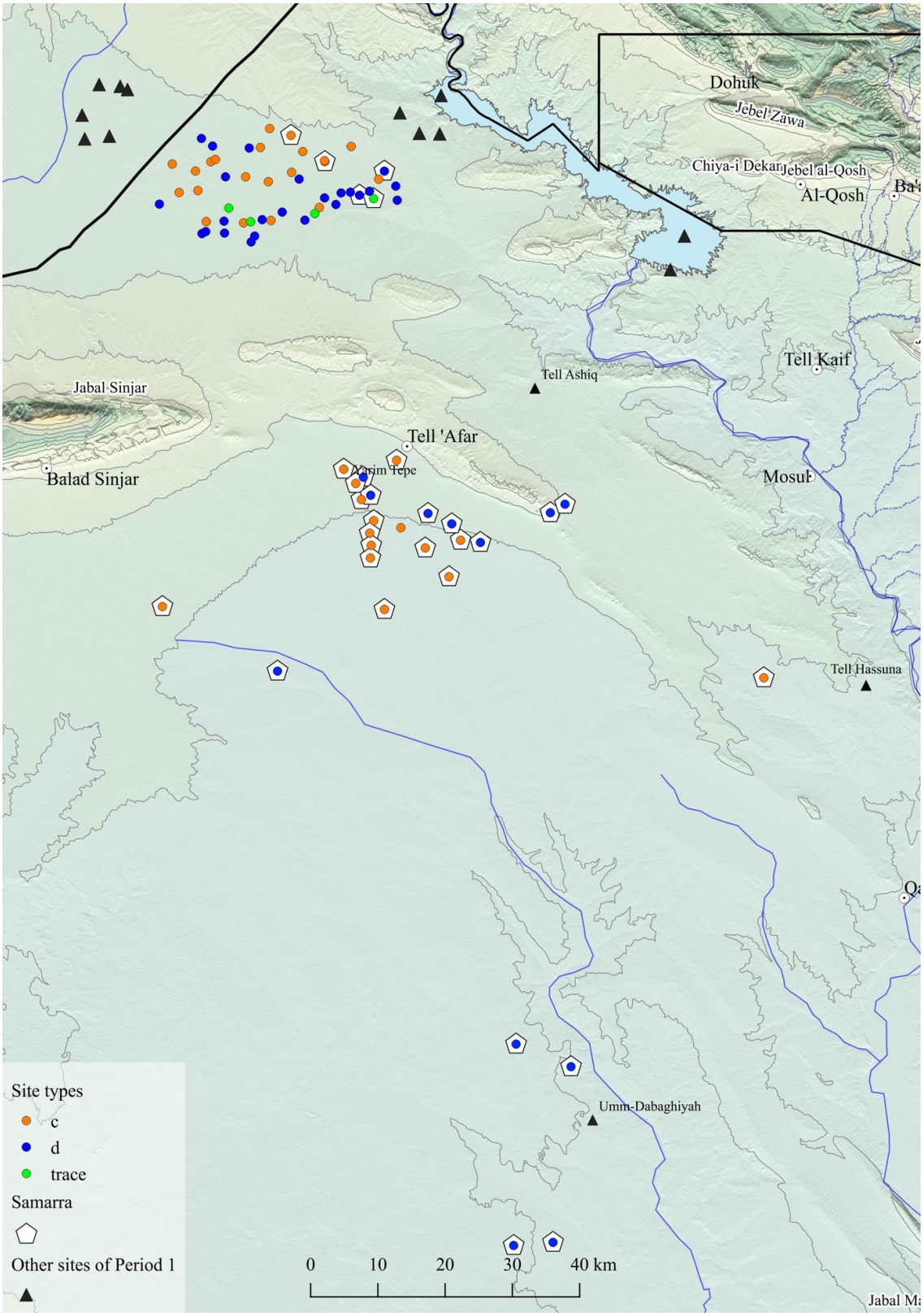

Fig. 4. Hassuna-period occupation in the regions of Tell Hamoukar, Tell al-Hawa, Tell 'Afar, and the Eski Mosul Dam salvage area (map: J. Mardas)

A survey conducted by Wilkinson and Tucker (1995) in the area to the north of Tell 'Afar, around Tell al-Hawa, showed that it also was extensively settled during the Hassuna period. The researchers recorded 44 sites dated to the Hassuna/Samarra period,[30] 20 of which also yielded pottery from the following Halaf period. According to Kintigh's formula (Table 4), the average number of contemporaneously occupied sites varied between ca. 10 and 15. The authors of the study also pointed out that the period might be underrepresented in the record because Hassuna layers could be buried beneath later settlement (Wilkinson, Tucker 1995: 38). The sites were evenly distributed throughout the surveyed area. In its southern part, they were located along relicts of streams. Some sites were also discovered away from water sources; thus, their inhabitants must have obtained water from other sources, for example, water holes (found at site 39) or transported it from sites which had access to water (Wilkinson, Tucker 1995: 39). Wilkinson and Tucker mentioned only four sites with Samarra pottery, which contrasts highly with the large number of sites featuring it in the region of Tell 'Afar. Of the 44 recorded sites, 10 featured Proto-Hassuna Pottery, 7 Archaic Hassuna, 20 Standard Hassuna, and there were 21 sites with pottery described simply as Hassuna (without more detailed information). Only four of these Hassuna sites yielded all types of Hassuna pottery (Proto, Archaic, and Standard), and two of them featured also Halaf pottery (but it is not mentioned whether it was Early or Late Halaf). There were also six sites which had both Standard Hassuna and Early Halaf pottery.

The survey in the neighboring area, just behind the Syrian border, was carried out by Jason Ur. In the area around Tell Hamoukar, six sites, distributed quite evenly, were recorded (quite many considering the small area of the survey). All of them (perhaps except one) were also occupied at least once in the later periods, but none grew to form a high mound, and as Jason Ur points out, this is a different pattern compared to the western Khabur basin (Ur 2010: 93–94).

In the region of the Eski Mosul Dam Salvage Project located along the Tigris to the north-east of Tell al-Hawa, four Hassuna sites were recorded. One of them, Abu Dhahir, yielded potsherds from all periods, from Hassuna until the end of the Khabur period. It is likely that the population of this region was quite small and probably still nomadic, and the settlements, except Abu Dhahir, might not have been permanent (Ball 2003: 10).

[30] One of them is Tell al-Hawa which was investigated by Ibrahim as site no. 216. Ibrahim ascribed to it a Samarran date, but Wilkinson and Tucker did not mention finding Samarran pottery at the site.

In his study of the distribution of Uruk, Jemdet Nasr, and Ninevite 5 pottery, Al-Soof (1968) mentioned 12 sites from the Hassuna/Samarra period: six of them located in Mosul Liwa, one in the area of Sinjar, one in the area of Tell Kaif, one in the area of Sheikhan (Ain Sifni), and three in the area of Tell 'Afar. There were also three sites of this period in the Erbil province, in the vicinity of Erbil, Qushtepe, Rawanduz, and two in the Kirkuk province, one close to Kirkuk and one in Chamchamal. Four of those sites were occupied also in the following Halaf period, and eight of them show traces of Uruk occupation as well.

Recent surveys have yielded some information about the Hassuna/Samarra settlement in the north-eastern part of Iraq. During the Erbil Plain Archaeological Survey (EPAS), 12 Hassuna/Samarra sites were found, all of them in the southern part of the concession (only this part and a few small areas along the Bastora and the Greater Zab have been investigated so far), about 20 km south-west from Erbil, but only one of them yielded material also from the following Halaf period; other Halaf sites were newly established (Ur 2017a).

The Land of Nineveh Archaeological Project (LoNAP), active to the west of the UGZAR study area, has so far discovered about 50 sites dated to the Early Pottery Neolithic period (however, the excavators do not differentiate between EPN and Hassuna/Samarra sites, and do not explain what EPN means). Most of the sites were located on the Navkur plain, to the south-west of the city of Rovia and in the area around Tell Gomel; some more lay to the south of Ba'adreh and a few others on the Girdapan plain, south of Dohuk (Iamoni 2017).

To the south-east from the UGZAR area operates the Archaeological Survey of Koya (ASK).[31] Only three sites dated to the Neolithic period have been recorded so far[32] (one of them yielded only Halaf sherds, the second – Halaf and earlier sherds, and the third exclusively pottery earlier than Halaf) (Pappi 2017).

The UGZAR area[33]

The UGZAR project has registered only eight sites from the Hassuna period, most of them in the western part of the concession (Fig. 5). All of the sites are located in the

[31] The first season of fieldwork started in 2016 (a pilot season was carried out in 2015), and the study season was conducted in 2017.
[32] It is not mentioned which periods besides Halaf are included in the term "Neolithic."
[33] In the case of this period, Kintigh's formula will not be used since none of the sites show evidence of continuity up to the Halaf period; thus, all of them seem to belong to *type d*. According to Olivier

close vicinity of streams or the Greater Zab. They all lie in open and flat areas with good agricultural potential and a wide view of the surroundings; only US218 is located on a rather more rolling plain.

The only site dated to Proto-Hassuna is Gird Ali Agha (US149), a small site located on the right bank of the Greater Zab, identified already by Braidwood (Braidwood, Howe 1960). It is a very low mound with an easy access to the river. The site has an Islamic cemetery on the top; it is damaged by agriculture (plowing) and highly endangered by gravel extraction from and along the river bed. The site was not settled again.

Only two of the Hassuna-period sites seem to have been settled also in the following Halaf period. These are US061 and US063, both located in the Karabak valley which forms a part of the Navkur plain where plenty of sites from the Hassuna period have been discovered by the LoNAP. Next to US061 lies site US060, a tell which, although it has not yielded Halaf pottery, was occupied during a few following periods. Perhaps the lack of Halaf sherds results from the older layers being covered by later ones. In fact, US061 and US060 could be considered as one site since they are only ca. 15 m apart.

It is difficult to determine how long these Hassuna-period settlements existed. Some of them might have been used only seasonally or for a short period of time. Some level of contemporaneity is perhaps probable in the case of only two sites, US061 and US063. Both of them have also yielded potsherds from the following Halaf period. The remaining sites were established and abandoned within the period and were most probably occupied for a rather short time, with the exception of US218 which has pottery representing all phases of the period. It is impossible to say which of these short-lived sites were contemporaneous. Site US149 was clearly the earliest (Proto-Hassuna) and functioned rather as a campsite than a permanent village.[34] At least two sites (US012, US218) have yielded potsherds which seem to be of Samarra type.

Nieuwenhuyse, there is no Halaf I pottery in the UGZAR area. This could suggest abandonment which, according to Nieuwenhuyse, is "extremely unlikely." In his presentation at the *Assyrian Landscapes: Current Research* conference (Poznań, May 2017), he mentioned a few possibilities: firstly, it is possible that Halaf I "has not been yet detected in the survey," secondly, people might have lived in small and short-lived villages rather than formed more permanent settlements, thirdly, it is possible that "the local transition to the Halaf is not understood" and thus further research is needed. It cannot also be ruled out that Hassuna pottery was in use longer in this area. Early Halaf is also absent in the Rania plain and on the Shahrizor (Nieuwenhuyse 2017a).

[34] At a nearby site Gird Chai (registered as US148 by the UGZAR project), Braidwood found a flint industry which "appears to be very close to those of Karim Shahir and M'lefaat" (Braidwood, Howe 1960: 55). However, we have not found any flints at US148. According to S.K. Kozłowski, M'lefaat's industry seems to be present at US063 (Koliński, personal communication).

Most of the sites lie quite close to one another; only site US218 seems extremely isolated. It is not only located far from the other sites but also difficult to reach. The site lies in a picturesque valley of a mountainous region. Interestingly, it is located in the close vicinity of a route that in much later times (the 1920s)[35] led from Erbil through Salah ad-Din, Shaqlawah, and the Harir plain towards Rawanduz. The site lies more or less halfway between Erbil and Rawanduz (ca. 50 km from these cities as the crow flies). As there is a Samarran site Girdi Rubiya[36] known to be located 5 km north of Rawanduz (Al-Soof 1968: 80), it is possible that some contacts between this site and site US218 existed. Towards the south-east, Samarran sherds are known also from Tell Shamshara.

Site US152 might have been connected with the ancient transportation system as well. There is a later route, marked on the 20th-century maps, that leads to the north-east, crosses the Bastora river to the south of the Gird Mamek village, passes the village and goes north to the place where on the opposite river bank is the Kharuk village, crosses the Greater Zab and leads through the mountains to the Karabak valley. This path is much older than the Hassuna period and there is absolutely no certainty as to whether people used it already in prehistory. However, routes and tracks may be used for centuries, and when looking at the routes on the modern map of Iraq, especially in the hilly areas, one notices that plenty of them have their origins in the distant past. On the other hand, it might have been impossible to cross the Greater Zab for most of the year since the lowest level of water occurs only during the autumn, and even then, a boat would be needed.

Conclusions

The region of the UGZAR work permit has very little of the Hassuna-period settlement, in contrast to the other areas, like the region of Tell 'Afar, the area around Tell al-Hawa, and the Navkur plain, which were much more densely occupied. There are also many sites of this period in the area of the EPAS, even though so far only the southern part of the area has been surveyed. All of these regions offer good agricultural conditions, with deep, fertile soils and adequate rainfall. The excavated sites from the Hassuna/Samarra period have yielded evidence of a mainly agricultural character of the settlements, as demonstrated by domesticated plant and animal remains found on them. Therefore, it is not surprising that people chose for their settlements a land which was the

[35] A map from 1942 issued by the Army Map Service U.S. Army Washington D.C.
[36] According to Al-Soof (1968), Halaf, Ubaid, and Uruk sherds have been found as well; the Iraqi Atlas mentions the Neolithic and Samarra periods.

most suitable for agriculture. Those three densely occupied areas are quite flat which made the communication between settlements easier. However, there is also evidence of special, probably seasonal sites, which specialized in hunting, as the case of Umm Dabaghiyah demonstrates.

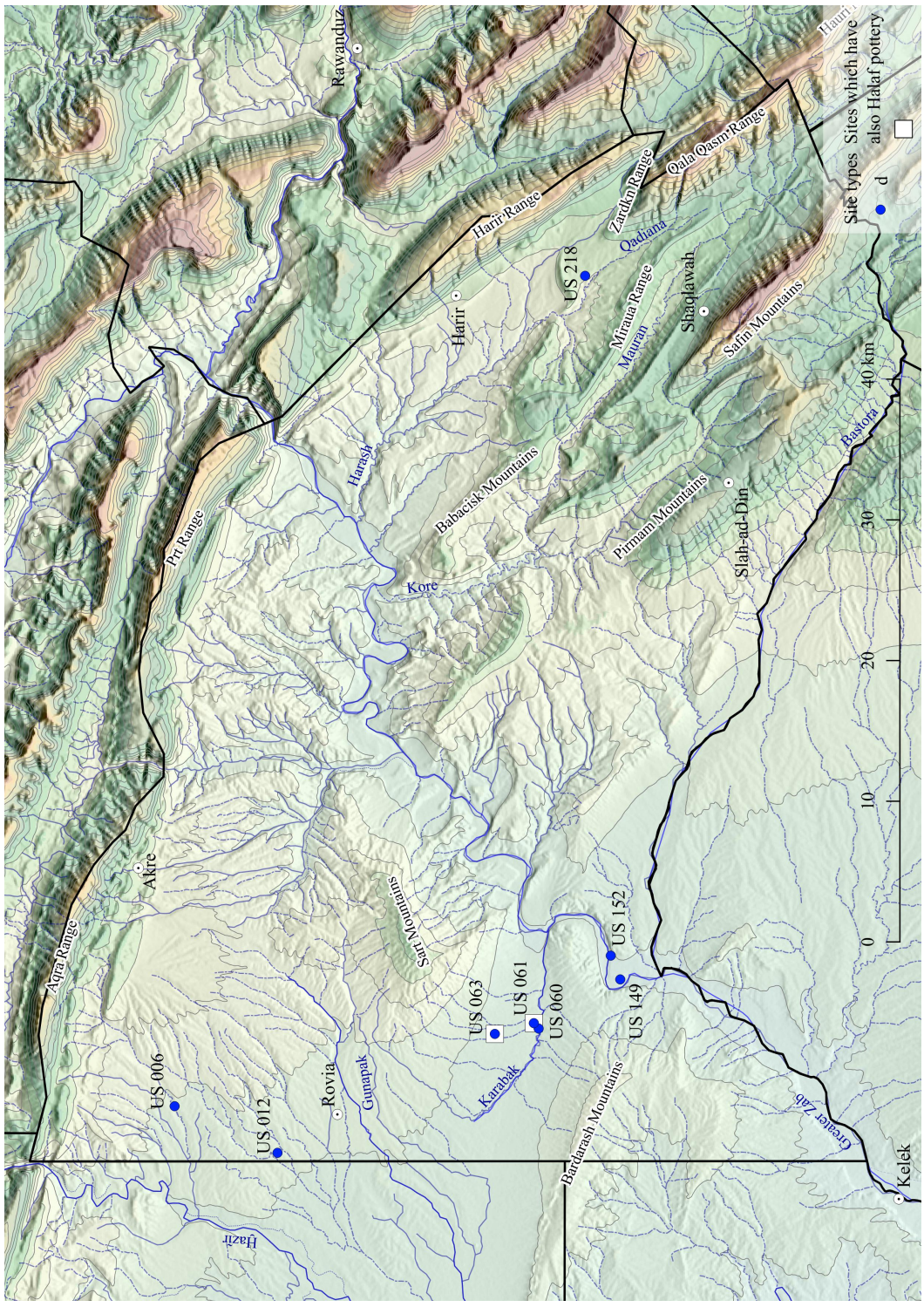

Fig. 5. Hassuna-period occupation in the UGZAR area (map: J. Mardas)

The western part of the UGZAR concession covers the eastern part of the fertile Navkur plain; in the plain's central and western part, the LoNAP project has identified many sites dated to the Early Pottery Neolithic. Despite the fact that it is unclear how many of them were Hassuna/Samarra sites, the Navkur plain was certainly not a deserted area in this period. The presence of imported materials might also indicate some contacts with other regions. However, in the case of the UGZAR sites, the evidence is sparse and not convincing. There is only one site on which both Hassuna pottery and obsidian were present (US063),[37] but since the site was continuously occupied till Late Uruk, it is difficult to ascribe these obsidian fragments to a certain period.

In the eastern part of the UGZAR area, only one Hassuna site has been found. It seems that this mountainous area to the east of the Greater Zab was quite peripheral at that time or that it was inhabited by people whose lifestyle did not leave any traces, possibly nomads. Kirkbride writes that during the dry winter of 1970–1971, both settled villagers and Bedouins moved with their animals to the mountains (Kirkbride 1972: 4).

The relationship between such seasonal movements of groups of people and the appearance of the settlement in the Solduz valley has been investigated at Hajji Firuz Tepe. The pottery discovered there shows similarities to some Hassuna sites, for example to Umm Dabaghiyah and Telul eth-Thalathat (Voigt 1983: 165). Voigt suggests that sedentary cultivators and herders from the west moved into the Solduz valley; however, it is unknown whether they came from the mountainous region cut by the Greater Zab and the Tigris or from the adjacent lowlands (Voigt 1983: 166). The distance in a straight line between the Harir plain, where site US218 is located, the Rania plain with Tell Shamshara, and Hajji Firuz Tepe is not that big (ca. 100–115 km); however, the route was not easy since it had to cross numerous mountain chains.

The intensive mobility of the Hassuna people might be reflected in the high number of sites abandoned during or at the end of the Hassuna period observable in the area of Tell 'Afar (12 out of 28), Tell al-Hawa (23 out of 48), and UGZAR (8 out of 8); however, it remains a conjecture whether these were seasonal sites or sites occupied only for a few generations. As was mentioned above, the lack of architectural remains at some sites – for example, Gird Ali Agha, Tell Shamshara, and the lowest levels of Hassuna – may suggest that they were campsites. Most of the Hassuna sites in the UGZAR area are small, and the number of collected sherds is limited (with the exception of sites US061 and

[37] This site has yielded tools resembling those from M'lefaat, so it was probably the only one inhabited also during the PPN (Koliński, personal communication).

US218), which may lead to the assumption that they were short-lived or seasonal settlements. But at the same time, the lack of architecture may indicate that the houses were built of perishable materials, and it does not necessarily mean that they were seasonally occupied.

The interesting issue is the relationship between the settlement pattern and burial customs. Choosing the location of graves is meaningful; it might have been related not only to the beliefs about the afterlife but also to social relations, power, and territoriality. According to Hypothesis 8 formulated by Arthur Saxe, a group of humans creates formal places for the burials of the dead in order to legitimize its rights to certain areas and their resources (Parker Pearson 1999: 136). This hypothesis was reformulated by Doug Charles in the following way: "social groups residing in environments in which the natural or culturally modified resource distribution supports a sedentary or restricted mobility mode of subsistence *may* [emphasis – J.M.] employ formal disposal areas for the dead to symbolize corporate membership, rights, and inheritance, whereas social groups reliant on a more mobile means of subsistence will not" (Parker Pearson 1999: 137). Sedentary and moderately mobile communities might establish cemeteries to manifest their right to a certain territory. In the case of highly mobile groups, the establishment of a cemetery would require them to return frequently to the same place; thus, cemeteries were rarely created by mobile groups, although there are exceptions. On the other hand, the absence of cemeteries does not mean that the links between the group and the territory did not exist (Parker Pearson 1999: 137). No Hassuna cemetery has been found so far, and as the burials found within the settlements were not located in any separated areas, one can only wonder whether there existed some external cemeteries (like in the later periods) or were the dead disposed of in a different way. There is a large variability in the burial practices of this period, which seems to be quite puzzling. The existence of external cemeteries or different ways of disposal may be hinted at by the fact that most of the graves found within the settlement belonged to juveniles, while adult burials were rare and ambiguous. The complexity of the burial customs and also the lack of remains of cult places might indicate non-institutionalized and dispersed beliefs, practiced rather in a private sphere.

Period 2 – Halaf

The Halaf culture is named after the archaeological site of Tell Halaf located on the Khabur, on the Syrian–Turkish border, and excavated by M. von Oppenheim in the years 1911–1929. The Halaf culture occurs widely in northern Mesopotamia, that is, in northern Iraq, northern, Syria and south-eastern Turkey, reaching as far as the region of Lake Van (Reilly 1940) in the north-east and as far as Kültepe and Nakhchivan in central Anatolia. The Halaf culture also influenced Palestine and the Levant (Merpet, Munchaev 1993d: 129). A map[38] (Fig. 6) published by Mühl and Nieuwenhuyse (2016: Fig. 2) shows the distribution of Halaf sites in northern Iraq. A few clusters of Halaf settlement are visible to the south-east of Jabal Sinjar, to the east of Jabal Hamrin, in the Erbil plain, in the Jubbur plain (the region of Makhul), and in the region of Lake Dokan.[39]

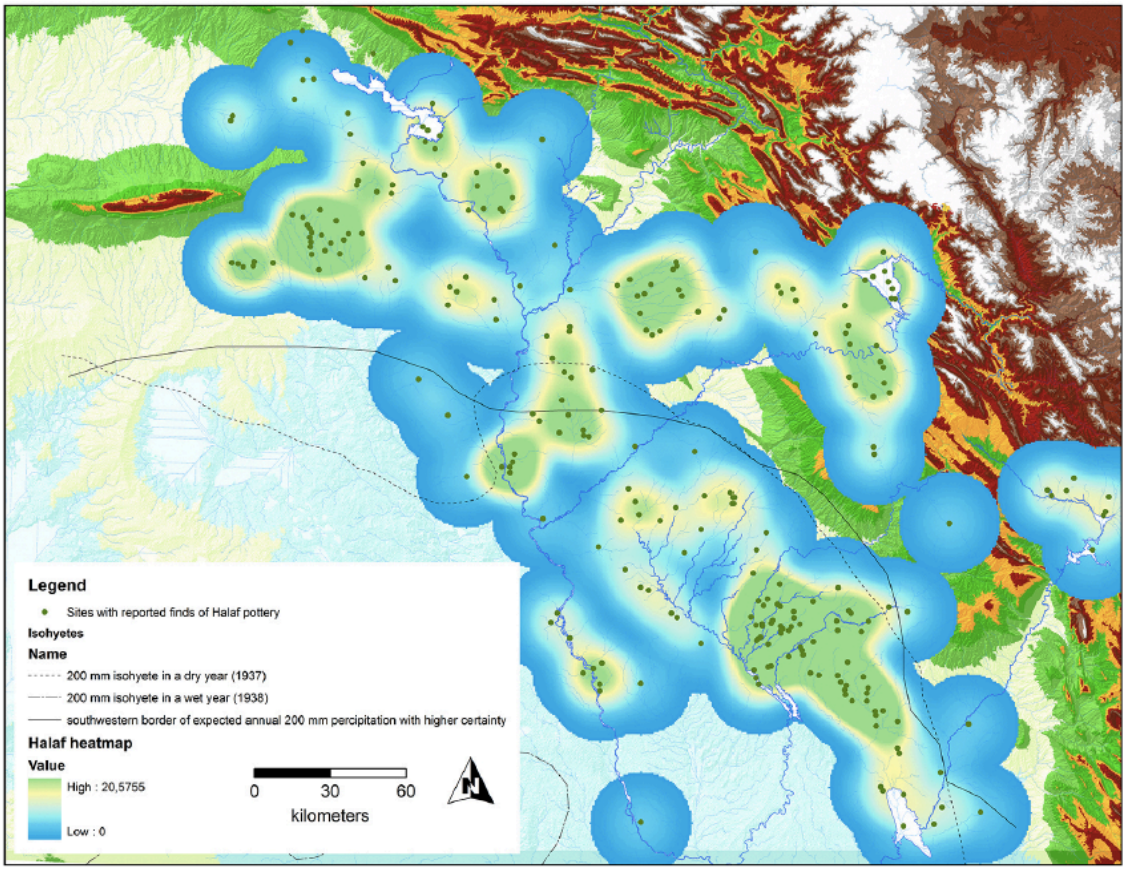

Fig. 6. Map showing the location of Halaf sites with visualization of their densities (after Mühl, Nieuwenhuyse 2016: Fig. 2)

[38] The map was based on the publication of Halaf sites by Hijara (1997).
[39] The region of Tell al-Hawa where Wilkinson and Tucker (1995) found 40 Halaf sites during their survey should be added to this list.

Most of the Halaf settlements are located to the north of the boundary showing the limits of rain-fed agriculture in the 1930s. The sites which lie to the south of this boundary are usually located along or in the vicinity of rivers (Mühl, Nieuwenhuyse 2016: 32, Fig. 2). The area of the Jubbur plain was less attractive for agricultural societies because of harsh agricultural conditions, but since historical times, this area, together with Jabal Makhul and Jabal Hamrin, has been famous for herds of gazelle; thus, Mühl and Nieuwenhuyse suggest that the area "served as hunting grounds for various later prehistoric groups that seasonally went after highly mobile, habitat-specific mammals" (Mühl, Nieuwenhuyse 2016: 33). It cannot be excluded that a similar situation occurred in the Hassuna period, at the already-mentioned site Umm Dabaghiyah, located ca. 75 km north-west from the Jubbur plain, which has yielded a high number of onager bones constituting the majority of all animal bones collected.

Settlement structures

A type of circular buildings, so-called tholoi,[40] appeared in Mesopotamia in the late 7th millennium BC and by the mid 6th millennium became predominant in northern Syria and Iraq. Usually, tholoi had only one circular room, but structures in the shape of a keyhole (circular room and rectangular antechamber) existed as well, as far west as Tell Sabi Abyad (Akkermans, Schwartz 2003: 103–105). There is no certainty as to their roofs; for example, it seems that some of the circular buildings from Yarim Tepe II had a flat roof, while others were dome-shaped (Merpert, Munchaev 1973: 109–110; Merpert, Munchaev 1987: 25). The earliest tholoi that appeared at Arpachiyah consisted of a circular room, while the later ones also had a rectangular room in the form of antechamber added (Mallowan, Rose 1935: 25; Hijara 1978: 127). However, the very earliest Halaf layer at Tell Arpachiyah featured rectangular buildings; tholoi appeared later, and the latest phases were marked again by rectangular structures (Hijara 1978: 126–127; Hijara 1980: 134–141). If Hijara's interpretation of architectural phases is correct, then the return to rectangular forms may find some parallels at Yarim Tepe III, where terminal Halaf layers featured already some Ubaid-culture elements. Here, round and rectangular structures existed together, but the latter had already become more popular, and the tholos-type buildings seem to have had a rather auxiliary character (Merpert, Munchaev

[40] This name was given to the buildings with a circular ground plan by Mallowan and Rose during the excavations at Tell Arpachiyah (Mallowan, Rose 1935: 25).

1993a: 170–171). The evolution of architecture at Yarim Tepe II and at Arpachiyah differed (Merpert, Munchaev 1987: 25)[41] because at Yarim Tepe II the circular buildings and the rectangular ones coexisted[42] since the earliest levels, and there is evidence of circular and rectangular structures occurring together also in the upper levels (Merpert, Munchaev 1973: 110; Merpert, Munchaev 1993d: 144). The tholoi from the earliest levels of Yarim Tepe II were single-roomed structures, but in later levels, some also had rectangular annexes attached to one or two or even three of their sides, which could have been used for storing (Merpert, Munchaev 1973: 109–110; Merpert, Munchaev 1987: 25). Similar features appeared perhaps at Tepe Gawra where the only tholos found had some walls attached to its outer wall. However, these additional walls have not been excavated further, and thus it is not certain whether there were some rooms attached to the tholos or whether it formed a part of a larger complex, or perhaps the walls were built for some different purpose (Tobler 1950: 47, Pl. XLV).

Most of the buildings at Yarim Tepe II were used as houses or stores, but one of the structures (a rectilinear one) from the upper levels seems to have had a non-domestic character, as no debris characteristic of household activities has been found inside. Merpert and Munchaev interpret it as a public edifice, perhaps of a religious character (Merpert, Munchaev 1973: 111). These two different building traditions, the rectilinear and the circular one, coexisted in some settlements, while in the others they appeared and disappeared in different moments of time. The circular buildings constitute a change in comparison to the Hassuna-period traditions when the buildings were almost exclusively rectilinear, although a circular structure of a domestic character did appear at Tell Hassuna.

There are various interpretations of the tholoi; these structures could have been a return to the old traditions of the earliest Neolithic communities which used round houses or a response to the environment deprived of trees because if a circular building has a dome-shaped roof (which is not certain in the case of the tholoi), then no timber is needed for its construction. The tholoi might have corresponded to the differences in social organization (Akkermans 1989: 59–66; Akkermans, Schwartz 2003: 106). Mallowan and

[41] However, it should be kept in mind that these differences might result from the fact that Yarim Tepe II was excavated extensively while in the case of Arpachiyah the architectural reconstruction by Hijara was based on a single trench (Merpert, Munchaev 1987: 25).

[42] In the earliest levels of Yarim Tepe II, three narrow, multi-roomed structures were discovered, which could have been used as granaries (Merpert, Munchaev 1987: 21). A granary or a silo was also found at Arpachiyah (Mallowan, Rose 1935: 15).

Rose suggest that the large tholoi from Arpachiyah had a religious or cultic function as they were located in the center of the settlement, some burials were related to them, and also "all the tholoi outside the Tepe are on a smaller scale than those in the Tepe, indicating that the most important buildings were in the centre of the site" (Mallowan, Rose 1933: 28, 34). In contradiction to Mallowan and Rose, the tholoi found at Yarim Tepe II were in most cases interpreted as domestic structures, since they usually had ovens inside and household assemblages on the floors (Merpert, Munchaev 1993d: 130, 138–142). Akkermans interpreted the small tholoi from Tell Sabi Abyad as granaries, while those with ovens could have been used as kitchens (Akkermans 1989: 59–66).

During the Halaf period, some sites, e.g., Yarim Tepe III, witnessed a successive rebuilding of structures, while others might have been settled in a more haphazard manner. This seems to be the case of Kharabeh Shattani where remains of only two (rather small, 2.5–3 m in diameter) circular buildings and some rectilinear walls have been found (Campbell 1986: 27–35; Baird 1995: 6–31). The settlement was characterized by "alternating sequence of construction and decay." If this pattern was typical for the whole site, then there would have been phases of building followed by abandonment and decay. However, it is also possible that the settlement was moving from one part of the site to another; in such a case, one area of the site would have been covered with abandoned and decaying buildings, while in the other new structures would have been erected and in use (Campbell 1986: 34–35).

Apart from the buildings, also various free-standing domestic installations were found at Yarim Tepe II and III and at Arpachiyah: clay hearths, *tannur* ovens for baking bread (usually located in the open air, close to the walls, but sometimes also inside the tholoi), and kilns for firing pottery (Merpert, Munchaev 1973; Merpert, Munchaev 1987; Merpert, Munchaev 1993a; Hijara 1980).

Procurement of raw materials and contacts with other regions

During the Halaf period, a kind of specialization might have occurred, observable in activities other than agriculture and animal husbandry. The burnt house from level TT6 at Arpachiyah has yielded convincing evidence in this respect. It seems that one of its inhabitants was a stone worker since stone vases, plenty of flint and obsidian tools, flint cores and thousands of debitage pieces have been found there. Another inhabitant seems to have been engaged in pottery production (Mallowan, Rose 1935: 103–105). Yoffee

points out the luxurious character of the finds (beautifully finished pots, stone vessels, amulets, jewelry) and suggests that it reflects the high status of the people dwelling there. The location and size of the building suggest that the owner of the house was not a simple craftsman. According to Yoffee, the "production and distribution of Halaf ceramics was 'controlled' by emerging local elites who maintained regular networks of communication and were bound by particular sets of interests" (Yoffee 1993b: 263). The house might have thus belonged to an elite member involved in the production and distribution of Halaf pottery (Yoffee 1993b: 263). The excavations at Yarim Tepe II and III have also yielded a variety of objects made of different raw materials, suggesting that this kind of production took place at other sites as well. The finds include stone bowls made of alabaster, limestone, marble and sandstone, seal pendants of steatite, serpentine, marble, sandstone, diorite and rock crystal, beads of carnelian, lapis lazuli, quartz, cowrie shell, serpentine, marble, steatite, diorite and alabaster conical spindle whorls, obsidian palettes and pendants (Merpert, Munchaev 1973: 112; Merpert, Munchaev 1987: 27; Merpert, Munchaev 1993a: 178, 190, 195; Mallowan, Rose 1935: 97).

Obsidian was imported from two main sources: the first in the region of Lake Van and the second in Bayezid, located to the north-east of the lake. Obsidian from the latter source was common on many Halaf sites, e.g., at Arpachiyah, Tepe Gawra, Nineveh, Chagar Bazar, Yarim Tepe III. In the later 6th and the 5th millennia BC, contacts were more widespread than before (Renfrew, Dixon, Cann 1966: 46–48; Perkins 1949: 35; Tobler 1950: 200). Renfrew, Dixon, and Cann suggest that the presence of a "Halafian outpost" at Tilki Tepe (stratum III) (Reilly 1940: 159–162) located on Lake Van might be especially significant in this respect (Renfrew, Dixon, Cann 1966: 48). The settlement might have participated in the acquisition and/or exchange of obsidian, primarily from the Bayezid source, which was abundant at the site (Renfrew, Dixon, Cann 1966: Table I, II, 48).

At Yarim Tepe III, mortars were made of gray, porous stone which does not occur in the Sinjar region (Merpert, Munchaev 1993a: 194), while at Yarim Tepe II some mortars were made of basalt (Merpert, Munchaev 1987: 27).

The variety of materials used to produce these diverse items of Halaf culture indicate the existence of contacts with various, often quite distant, regions. Since northern Mesopotamia is rather poor in valuable raw materials (Moorey 1994: 21), the goods that could have been offered for exchange were probably Halaf vessels.

Food sources – land use

Not much information on the plant remains from the Halafian settlements in northern Iraq have been published. The soil samples from Arpachiyah yielded remains of emmer, hulled and naked six-row barley, hulled two-row barley, and lentil. At Yarim Tepe II, domesticated barley[43] (naked and many-rowed) was a major crop, but wheat occurred as well (Hubbard 1980: 154; Bakhteyev, Yanushevich 1980: 171–173).

The most popular domestic animal species kept during the Halaf period were sheep and goats; domesticated cattle and pigs were used as well. The percentage of the remains of these species varied depending on the site. At Yarim Tepe II, cattle and pigs constituted only 11% and ca. 12% of the number of identified bone fragments[44] respectively. Forty percent of cattle were killed at a young age;[45] thus, they were not used as beasts of burden. In the case of sheep and goats, there were not many remains belonging to young individuals which suggests that these species might have also been used for their secondary products like wool, milk, and leather. At Banahilk, 47.5% of sheep and goat survived beyond ca. 4 years of age, 25% of cattle lived longer than 3 years, but in the case of pigs only 14.3% were killed after the age of 3. At Arpachiyah, almost all cattle were killed before the age of 3; conversely, sheep and goats were usually killed having more than 3 years. Pigs, however, were killed before the age of 1, which resembles the pattern from Banahilk. Although domesticated animals played an important role in providing food, people still hunted some wild species, including wild sheep, goat, and cattle. The ratio of wild to domestic animals varied between sites as well. At the site Umm Qseir located in the Middle Khabur valley (to the south of Hasake), wild species dominated, constituting 57% of all animals; at Yarim Tepe II and Banahilk, wild animals represented slightly over 20% of all individuals; at Arpachiyah, however, wild animals were scarce (only a few bones of gazelle and large canids have been found). The array of hunted wild species depended on the landscape setting of the settlement in question; for example, at Yarim Tepe II, which was located on the plain, the most numerous were remains of onager, followed by gazelle, jackal, tiger, badger, and porcupine, whereas at Banahilk, located in the mountains, there was a considerable number of land snails (which seem to

[43] Bakhteyev and Yanushevich (1980: 76) suggest that the high proportion of barley might indicate that it was a source of food not only for humans but also for animals.
[44] Akkermans (1993: 253), referring to the Yarim Tepe II animal bone assemblage, gives slightly different values: pigs constituted 14.4% of the bone count (15.2% of all individuals), while cattle 13.2% (11.9% of all individuals).
[45] There was no information about the exact age and sex of the killed animals.

have been a significant part of diet, along with the meat of mammals) and also remains of red deer, roe deer, red fox, brown bear, leopard, hedgehog, birds, and fishes (Baird, Campbell, Watkins 1995: 189; Croft 1995: 165–166; Cavallo 2000: 20; Grossman, Hinman 2013: 211–212, Table 9; Laffer 1983: 629–647; Watson 1980: 152–153). The presence of local wild species at these sites might indicate that they were hunted for local consumption rather than for long-distance exchange. However, wild species, as well as domesticated ones, could have been exchanged for grain on a local scale. Thus, pastoralists and agriculturalists could have coexisted and provided each other with specific products. Wandering nomads could also have participated in the exchange of other products, e.g., raw materials.

Burial customs

The burial practices of the Halaf period were quite complex; there is evidence of simple inhumations, cranial burials, and cremations of the dead. The only Halafian cemetery known so far was located atop Yarim Tepe I. The place was used repeatedly as a cemetery in later times, and the Halaf burials, which were the earliest, have been seriously disturbed by later graves dating to the Babylonian, Hellenistic, and Islamic periods. The Halafian burials from the cemetery at Yarim Tepe I contained the remains of nine mature adults and one juvenile, contrary to burials found within the settlement of Yarim Tepe II which belonged mainly to juveniles and infants. Moreover, burials within the cemetery show less variability than those in the settlement, for instance, there was no evidence of either cremation or cranial burials on the cemetery. Most of the graves found at Yarim Tepe I were primary inhumations; the dead were placed on their sides in a severely contracted position. Mortuary offerings such as ceramic and alabaster vessels, polished hematite pins and axes, beads and pendants of stone and shell have been found inside the graves. Some burials were preserved well enough for a sloping shaft to be detected, at the end of which was a small chamber for the body. The ceramics from the cemetery show that the site was contemporaneous with the upper Halaf levels of the neighboring settlements (Merpert, Munchaev 1993c: 218–221).

Excavation at the Yarim Tepe II settlement yielded fifteen burials of various types, forming three distinct groups: primary inhumations, cremations, and cranial burials. There were also secondary burials, but these were rare. The primary inhumation burials were not associated with any buildings; some of them were individual whereas other were

multiple. The majority of the dead were juveniles, lying on the side; in two cases, they were equipped with mortuary offerings—one with a white alabaster cup and the other with a miniature goblet filled with pins, beads of carnelian, 234 beads of shell, 328 beads of soft stone, and there were also charred sheep and goat bones. In some cases, it was possible to see that the dead were buried in a small pit or a burial chamber. The cremations have been found in the lower levels; thus, it is probable that this custom was practiced only in the earlier phase of the Halaf period. There were seven cremation burials, only two of which seem to have been primary cremations or associated with a nearby crematorium;[46] in the other cases, the cremation occurred somewhere else. The mortuary offerings in cremation graves usually included ceramic vessels. One of the graves, belonging to a 10–13-year-old, was more richly equipped; besides stone and ceramic vessels, it contained a stone-seal pendant, a perforated bone pendant, a biconical ceramic spindle whorl, two cowrie shells, 26 gypsum, 38 obsidian, 8 rock-crystal, and 27 ceramic beads (Merpert, Munchaev 1993c: 209–217). The other type of burial, the interment of crania, occurred only three times and was associated with the earliest building levels (in the same square and level as the early cremations). Two of these cranial burials consisted of a single cranium in a "highly organic layer of clay"; no traces of burial pits were visible. The third burial consisted of three crania placed in a round pit; two of them belonged to mature adults and the third to a juvenile. No grave goods were associated with the cranial burials (Merpert, Munchaev 1993c: 217). Cranial burials have also been found at Arpachiyah. Hijara discovered three burials located next to the tholoi, in levels VI, VII, and VIII. Two of them were cranial burials.[47] Skulls were placed in pottery vessels. One grave contained four skulls placed in separate vessels. Additional vessels made of stone and pottery were associated with two of these graves (Hijara 1978: 125). Hijara supposed that Arpachiyah was a religious center and these cranial burials could have belonged to people of special position. However, Merpert and Munchaev disagree with him, pointing out that the graves are not extraordinary since they have been found at Yarim Tepe II as well (Hijara 1978: 127–128; Merpert, Munchaev 1993c: 217). Besides these two cranial burials, earlier work at Arpachiyah by Mallowan revealed nine Halaf burials; all of them

[46] In the case of the first burial, the charred bones of a juvenile were placed in a vessel and buried beneath the floor of a tholos, while "the crematorium was discovered alongside this structure where a thick layer of charcoal and ash from the bonefire was preserved." On top of an ash layer, fragments of deliberately shattered vessels (an alabaster goblet, a bowl, and three ceramic vessels) were found (Merpert, Munchaev 1993c: 216).

[47] The third burial was not described by Hijara, except for the information about its location.

were inhumations of complete bodies within the settlement (three of them belonged to juveniles). Three of the burials were associated with the tholos area. The orientation of the graves was varied; bodies lay on the side, sometimes flexed or in embryonic position. The dead were usually equipped with pottery, sometimes also with an obsidian or flint knife, a stone celt, an amulet, and beads (Mallowan, Rose 1935: 42–43; Merpert, Munchaev 1993c: 207–208).

Several Halaf graves were found at Chagar Bazar. The recent excavations yielded 13 burials (one was discovered in the Proto-Halafian layers, and two pit burials were linked to the Early Halaf layers); all of them were simple inhumations located within the settlement, between buildings or in a courtyard, outside the domestic structures. The graves belonged to five adults, five infants, two newborns, and a fetus. The dead were buried in a flexed position; usually, there were no grave goods, except for three burials where the dead were equipped with vessels (Cruells 2013: 475). Earlier, Mallowan found eight Halaf graves, five of them belonging to children and three to adults[48] (Mallowan 1936: 18).

A very peculiar burial was found at Tepe Gawra; it was a 5-m-deep pit with 24 skeletons. Originally, the pit was used as a well but then lost its original function. The bodies of the dead were lying on four different levels, and the positions of the skeletons suggest that the dead were simply thrown into the pit. All dead were adults; one of them was described as a young adult. Generally, the bones were very fragile, and, except for one skull, which turned out to belong to a ca. 25-year-old female, no other information could be obtained. Tobler indicates that "no crushed skulls or other marks of violence in the bones could be noted" (Tobler 1950: 50). This observation and the fact that one of the skulls was female precluded, in his opinion, the assumption that the dead were victims of a possible conflict. The reuse of an earlier well and the lack of burial gifts and any ritual suggest that this kind of the disposal of the dead most probably did not have a sacrificial character. It is possible that the dead were the victims of famine or plague (Tobler 1950: 48–50; Krogman, Sassaman 1950: 216–217).

It seems that the area of the settlement was reserved for the burials of juveniles and for the more ambiguous types of burials, like cremation or cranial burials, similarly as in the Hassuna period, while the graves of adults were placed outside the settlement limits.

[48] No detailed information about these graves is given. Mallowan described all 75 graves he had found in general. Most of these were simple inhumations, and there were a few pot burials; the dead were placed in a flexed position (Mallowan 1936: 17–18).

The cemetery could have been used not only by the people from the nearest settlement but also by other sedentary and mobile groups living in the region.

Settlements' distribution and dynamics

The region of Tell 'Afar continued to be quite densely settled in the Halaf period (Fig. 7). However, the number of sites was lower than in the previous period. Earlier, there were 11 sites with Hassuna and 27 with Samarra pottery (10 of which yielded both Hassuna and Samarra material), 28 sites in total. In the Halaf period, the number dropped to 24 sites.[49] More than half of these Hassuna/Samarra sites yielded pottery from the Halaf period. Eight of the 17 sites yielding exclusively Samarra pottery were abandoned. In comparison to the previous period, fewer sites were settled and abandoned within the period (sites of *type d*), and there were only a few sites (sites of *type a*) which were settled in the previous period and seem to have been abandoned in the Halaf period (Table 5). Quite many sites (sites of *type b*) were perhaps continuously occupied, starting in the Hassuna period and continuing after Halaf, since they yielded potsherds also from the post-Halaf periods. Moreover, the average number of contemporaneous settlements could have been quite high in respect to the total number of sites (Table 1). The rates of establishment and abandonment are similar, suggesting a quite stable settlement, especially in comparison to the previous period.

In Wilkinson and Tucker's survey (Table 6), the distribution of Halaf sites was similar to the pattern observed in the Hassuna period (Wilkinson, Tucker 1995: 39). In the Halaf period, more sites were located away from the streams; water holes have been discovered at sites 140 and 172 (Wilkinson, Tucker 1995: 40). Of the ten sites described as Early Halaf, six yielded also Standard Hassuna sherds (which are later than Proto and Archaic Hassuna). Interestingly, only four out of these ten Early Halaf sites yielded also Later Halaf pottery, so the rate of abandonment within the Halaf period was quite high. At least three sites were settled at the end of the Halaf period since they are said to have yielded only Late Halaf sherds (some of the sites were described by Wilkinson and Tucker as simply having Halaf pottery, without mentioning whether it was Early or Late Halaf); all of them were located in places where Proto and Standard Hassuna have also been found. Only four sites with Early Halaf pottery were located in places that had not been

[49] It must be kept in mind that Ibrahim does not give any information about the phases of the Halaf pottery; thus, it is possible that some of the sites which seem to have been continuously occupied for two or more periods were in fact abandoned and resettled one or more times.

occupied before. Seven might have been continuously occupied throughout the Halaf period, which is proportionally much less compared to the Tell 'Afar region. There were plenty of settlements which became abandoned within the period; some of them had been founded already in the Hassuna and others in the Halaf period. Also, the number of new settlements was quite high. In total, there were 40 Halafian sites, but the average number of contemporaneous settlements varied between ca. 18.5 and 23.8 (Table 2). The rates of establishment and abandonment are similar which indicates that although some changes did occur, the occupation was quite stable (Table 2).

In both of these regions (Tell al-Hawa and Tell 'Afar), the settlement pattern did not change drastically. There was a certain degree of rotation, but generally, these areas showed a similar pattern of occupation as in the previous Hassuna/Samarra period. Both also seem to have been quite stable, although in the region of Tell 'Afar there were proportionally much more sites which could have been continuously occupied, while the settlement in the region of Tell al-Hawa looks a little bit more dynamic.

Table 5. Halaf-period occupation in the Tell 'Afar region

a	*b*	*c*	*d*	Occ_{abc}	Occ_{d+}	Occ_{d-}	Occ_{d}	*Occ*	*Min. no of sites at period's*		*p**	E_{occ}	A_{Occ}	*Total no of sites*
									beginning	*end*				
5	11	4	4	15.5	2	2.22	2.11	17.61	16	15	600	0.013	0.015	24

Table 6. Halaf-period occupation in the Tell al-Hawa region

a	*b*	*c*	*d*	Occ_{abc}	Occ_{d+}	Occ_{d-}	Occ_{d}	*Occ*	*Min. no of sites at period's*		*p**	E_{occ}	A_{Occ}	*Total no of sites*
									beginning	*end*				
12	7	11	10	18.5	5.24	5.45	5.35	23.85	19	18	600	0.035	0.037	40

In the case of the Tell Hamoukar survey, located to the west of Wilkinson and Tucker's survey, behind the Syrian border, the number of settlements from the Halaf period doubled in respect to the previous period, and almost all of them, except one, were established in new locations. Some of these sites constituted the earliest settlement period of multi-period sites (Ur 2010: 94–95). Twelve of the Halaf sites in the Tell Hamoukar area belonged to *type d*, and only one was *type a*; thus, Kintigh's formula is not very useful in this case.

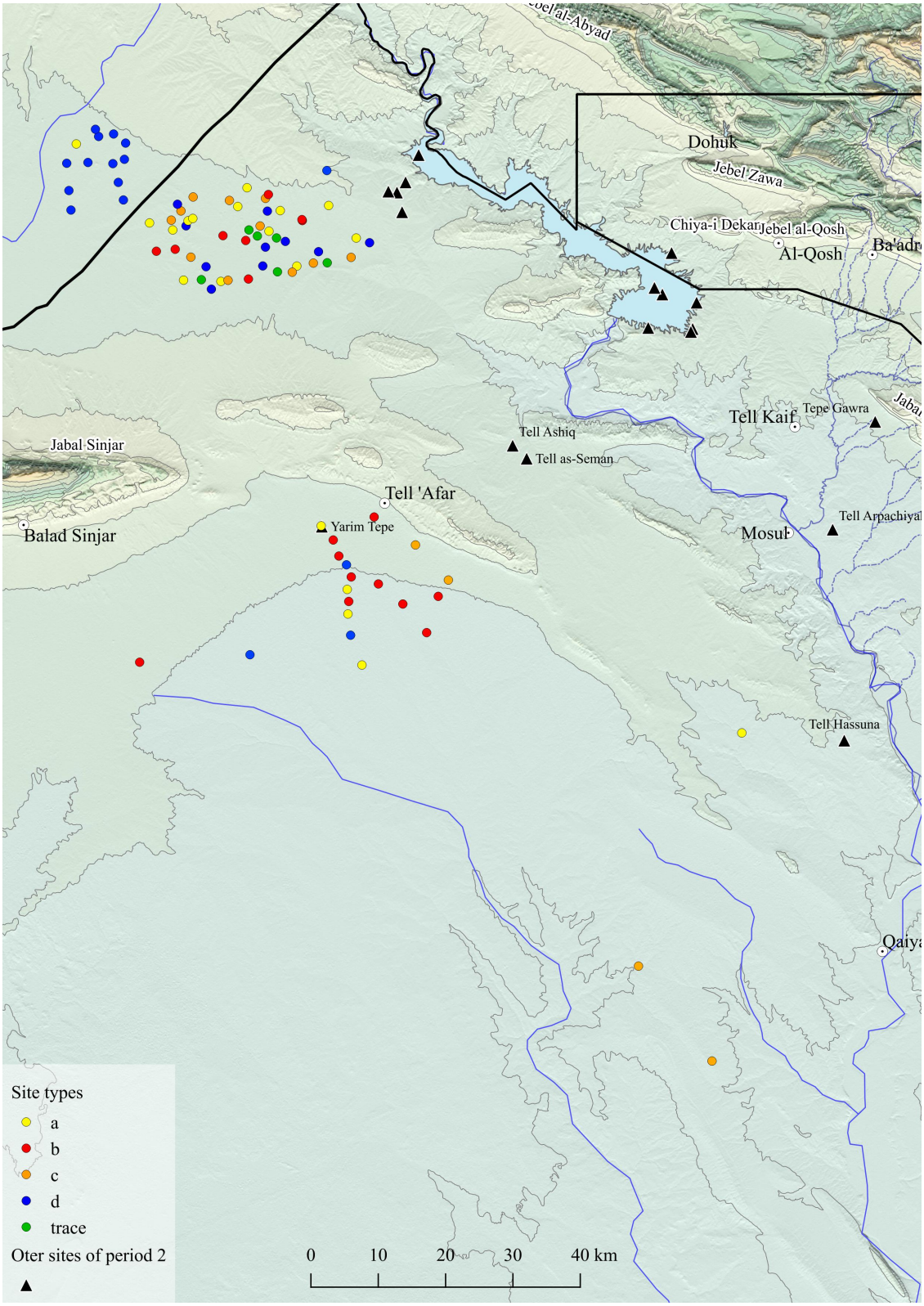

Fig. 7. Halaf-period occupation in the regions of Tell Hamoukar, Tell al-Hawa, and Tell 'Afar (map: J. Mardas)

The region of Zammar yielded only five sites from the Halaf period; on three of them, the presence of Halaf material is doubtful. Four of these sites continued to be

occupied also in the following period. Most of these Halaf sites were clustered around Bardiya. The low number of Halaf sites contrasts with the southern area of the Eski Mosul Dam Salvage Project where Halaf sites were more common (Ball 2003: 10).

The LoNAP survey has recorded 45 sites dated to the Halaf period. A few of them were located to the north of Al-Qosh, behind the Dekan mountains; some more lay to the south of Ba'adreh and Sheikhan. However, the highest density of settlements occurred around Tell Gomel and in the eastern part of the Navkur plain to the south-west of Rovia.

To the south of the UGZAR area, Jason Ur's survey (EPAS) has recorded eight sites in the southern part of its concession, spread along the area of the Kurdara and Siwasor streams. The settlement was more dispersed than in the Hassuna period.

As was mentioned in the previous chapter, so far only two sites have been recorded by the ASK project in the area to the south-east of the UGZAR (Pappi 2017).

The UGZAR area[50]

Compared to the regions of Tell 'Afar and Tell al-Hawa, the settlement in the area of the UGZAR concession looks much different. The number of new Halaf sites is much higher. In the previous Hassuna period, there were only eight sites, including one with Proto-Hassuna pottery. In the Halaf period, there were 22 sites, and only two of them, US063 and US061, had also pottery from the Hassuna period. However, these two sites were not continuously occupied from Hassuna to Halaf since they were settled in the later part of the Halaf period (Halaf II).

Most of the sites were located on the Navkur plain (Fig. 8), in the Karabak valley, and on the Harir plain cut by the Harash stream. These three areas were much more densely occupied during the Halaf period than earlier. Nearly all the sites lay on the banks of the streams or in their close vicinity, usually not more than 150 m away. Only two sites, US139 and US163, were located on the Greater Zab's bank. In most cases, the sites were found in open areas with a wide view of the surrounding terrain. In the case of US163, the situation was slightly different; the site lay in an area overshadowed by the highest terrace of the Greater Zab river.

There were three clusters or groups of settlements. The first one was located on the Harir plain where two sites appeared along the Harash stream, and one lay a bit further from

[50] Kintigh's formula was not applied due to the fact that all of the Halaf sites from the UGZAR area seem to belong to *type d*.

the Harash stream. In the neighboring Qadiana valley, the Hassuna site US218 was not occupied during this period, but a new site US222 appeared slightly to the south; perhaps the inhabitants of US218 just moved from one location to the other. Of these four sites, only US198 was resettled in the Ubaid period. In this context, it is worth to mention a site called Girdi Banahilk, found by Braidwood, located ca. 5 km to the north of Rawanduz. Its main occupation occurred in the Halafian period, and there seem to be only some traces of later occupation (Braidwood, Howe 1960: 34). Perhaps Girdi Banahilk and the other Halafian sites in the Harir plain, only 25 km distant, were somehow related; in fact, the pottery from Banahilk[51] is closely related to the one from Arpachiyah (LeBlanc, Watson 1973: 117–133), and the route to the region of Banahilk and Rawanduz leads through the Harir plain and the Spilik pass.

The second cluster of sites was located in the Karabak valley where most of the Hassuna sites were no longer occupied; only two sites seem to have been resettled in the Halaf period: US063 and US061. As many as 11 completely new sites appeared in this area. Seven of them also yielded Ubaid pottery which might suggest resettlement. Site US058 yielded the highest number of Halaf sherds, while the other periods were scarcely represented at this site. Other sites yielded much less Halaf sherds, but unlike US058, many of them were occupied also in later periods; thus, the older layers might be covered by the later ones. The other possible explanation could be that US058 was settled quite intensively during the Halaf period.

In the eastern part of the Navkur plain, in the vicinity of Rovia, lay another group of sites. US033 and US032 were neighboring sites, less than 200 m distant; the former yielded more Halaf sherds than the latter (there was only one sherd). Both sites might have been settled at the same time, but it is also probable that the presence of the one sherd at US032 was accidental and that, in fact, the sherd came from the neighboring US033. Two other sites, US021 and US027, were located slightly to the north. Site US027 yielded quite many Halaf potsherds compared to the other sites. Three of the sites from this group, US033, US021, and US027, might have been resettled in the Ubaid period (each of them yielded only one Ubaid sherd).

[51] As far as the dating of Banahilk is concerned, Campbell writes that the dates have been "determined in the early 1970s and have poor resolution but generally suggest a date sometime after ca. 5800 cal. BC for the Halaf II assemblage" (Campbell 2007: 130).

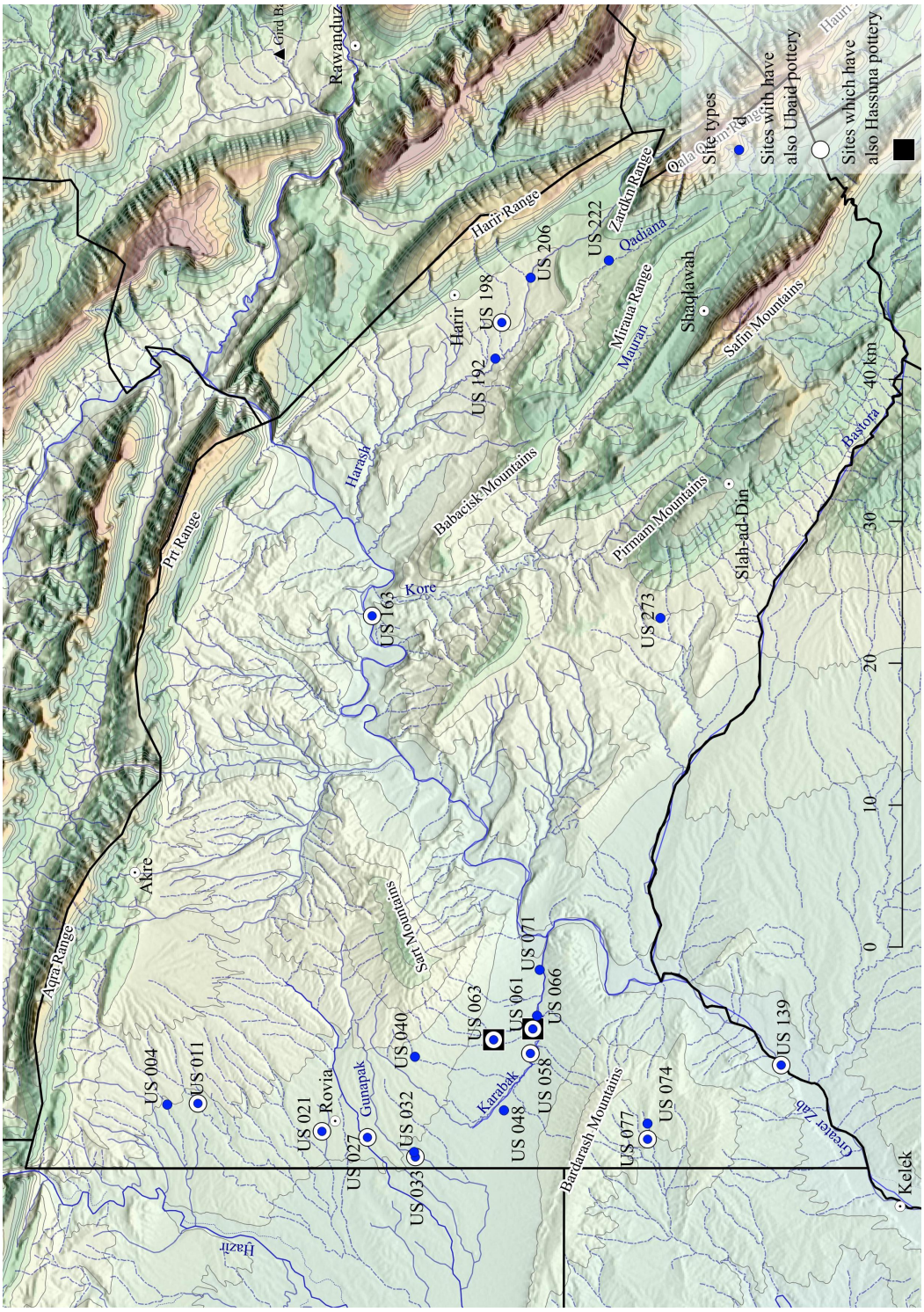

Fig. 8. Halaf-period occupation in the UGZAR area (map: J. Mardas)

A pair of sites was located in the northern part of the Navkur plain. The Hassuna site US006 was not used in the Halaf period anymore, but two settlements were established in the neighboring area in this period. Site US004 was located 650 m upstream, and site US011 lay 2 km to the south-east. Of these two Halaf sites, only US011

was resettled in the Ubaid period, and two more Ubaid settlements appeared in the vicinity (one of them was US006).

Three sites (US163, US273, and US139) were quite isolated. The first two were also settled in many later periods, but US139 seems to have been occupied mainly in the Halaf period (there are also traces of Ubaid, only two sherds). Sites US163 and US139 lay on the Greater Zab's bank. These two sites may be an indication of contacts with foreign regions as both of them have yielded fragments of obsidian. In the case of US163, the date of obsidian is uncertain because the settlement was occupied through all the periods until the Khabur period (MBA). However, obsidian collected on US139 should be of Halafian origin as the site was occupied mainly in the Halaf period (besides Halaf, there were only two sherds of Ubaid pottery and a number of Late Ottoman fragments).

Site US273 lay on a plain between mountains, on a much later route which led from Erbil to US273 (Deira) and then continued either through the pass guarded in later times by the castle of Qala Diuin or through the Qurabak village on the bank of the Greater Zab to the Harir plain and further to Rawanduz (the track is marked on maps from 1899 and 1942).

Two settlements, US077 and US074, were located in the Gume Zard-i valley. Each has yielded only Halaf sherds; US077 was used again in the Ubaid period. Both sites were small, ca. 2 ha in area.

It is hard to estimate the area of a settlement in a given period since many of them were occupied also later, and some sites have yielded only one sherd. It seems that most of the settlements were rather small; the total area of nine sites was less than 1 ha, and in the case of six sites, it varied between ca. 1.5 and ca. 2 ha. There were a few larger sites with evidence of later occupation as well.

The 22 discovered Halafian sites were most probably not settled contemporaneously, but so far, it has been impossible to determine how many were occupied at the same time. All of the sites seem to have been abandoned for some time. According to Nieuwenhuyse (2017a), there is no Halaf-Ubaid Transitional pottery. Nieuwenhuyse (2017a) points out that there might be other possibilities: this ceramic horizon has not been detected yet or the transition from Halaf to Ubaid might not be understood for now in this area. In the following Ubaid period, ten of the Halaf settlements were reoccupied.

Conclusions

The Halaf settlements display some similar features, but at the same time, they differ to some extent. One of the most characteristic features of the Halaf period, the circular buildings, coexisted with the rectangular structures at some sites, while at others, the circular and rectangular structures appeared and disappeared at different points of the period. Burial practices show some variety as well; the areas of the settlements seem to have been reserved mostly for infants and juveniles and for ambivalent burials such as cranial burials or cremations. Adults were probably buried outside the villages, perhaps on cemeteries like in the case of Yarim Tepe I. No special burial constructions such as chambers or enclosures were found; thus, the status of the dead might have been visible only in the grave goods. Also, the pattern of subsistence differs between sites; some of them seem to have been focused mostly on domesticated animals while at others wild species played a significant role. Even Halaf pottery, which at first sight looks homogenous, shows local variations. Although the inter-regional interactions increased during the Halaf period, and some level of homogenization and standardization is visible within the culture, the local characteristics and traditions were still expressed (Nieuwenhuyse 2017b).

During the Halaf period, both the regions of Tell al-Hawa and Tell ’Afar seem to have represented similar settlement dynamics which appear quite stable. In both of these regions, the difference between the rates of establishment and abandonment was small; also, both of these regions recorded a small decrease in the number of settlements. Similarly, in the areas of the LoNAP and the EPAS, the number of settlements in the Halaf period decreased. In contrast to these regions, the area of Tell Hamoukar experienced a significant increase in the number of settlements compared to the previous period. This is quite surprising, especially since the area of Tell Hamoukar and the area of Tell al-Hawa are located very close to each other. During the Halaf period, the number of sites increased significantly also in the UGZAR area. However, it is difficult to say whether these were seasonal locations of pastoralists or small villages established by people moving from one place to another which lasted only for a few generations.

The settlement of the Halaf period is characterized by dichotomy; on one hand, there are many small temporary sites, and on the other, there existed also some long-term settlements (e.g., Yarim Tepe II). Based on the survey data, it can be said that settlements were usually quite small; in the case of the Tell al-Hawa region, their size varied between 1–2.5 ha, while the Hassuna sites were usually around 1 ha in area (Wilkinson, Tucker

1995: 40). The existence of some more permanent sites might imply the emergence of local "proto-centers" of production and exchange, which might be indicated by the burnt house from the level TT6 at Tell Arpachiyah where apparently the workshop of a potter and stone worker has been found. Handicraft products could have been used in the process of exchange controlled, according to Yoffee (1993b: 263), by the emerging local elites.

The intensification of the exchange of raw materials and other goods is a characteristic feature of the Halaf period. The contacts of the sites in the UGZAR area with foreign regions might be confirmed by the presence of obsidian at the mainly Halafian site US139 located on the western bank of the Greater Zab. Perhaps another result of the increased exchange was the appearance of settlements in the previously almost deserted eastern part of the UGZAR concession. It cannot be excluded that the settlements on the Harir plain had some relation to the settlement of Banahilk located further to the north. The higher number of sites on the Navkur plain and in the Karabak valley might have resulted from the fact that the area was suitable for agriculture and seems to have been well utilized by agricultural Halafian communities.

Contrary to the UGZAR area, however, in the case of the Tell 'Afar and Tell al-Hawa regions, there was no increase in the number of sites despite the fact that these areas were located on the crossroads of communication tracks. However, in both of these areas, the average number of potentially contemporaneously occupied sites has increased slightly.[52] The lack of significant increase in the number of sites might be related to the area's subsistence capability (Koliński, personal communication).

[52] When comparing the values presented in the tables, the increase might seem quite large, but it must be kept in mind that in the case of the Hassuna period, the average number of contemporaneously occupied sites was calculated based only on sites of *type c* and *type d*, and thus might be underestimated. If the number of sites potentially occupied at the end of the Hassuna period is compared to the average number of contemporaneously occupied sites in the Halaf period, then the increase is smaller.

Period 3 – Ubaid

The term Ubaid was variously used as a designation of pottery style, period, or culture (Carter, Philip 2010: 2). The definition of the pottery style was based on the description of sherds from excavations at Abu Shahrain (Eridu) and Tell al-Ubaid in southern Mesopotamia (Campbell Thompson 1920; Hall, Woolley 1927). Later, the term started to be used as a label for a particular cultural period, which was divided by Joan Oates into four phases, Ubaid 1–4. Later, during the excavations at Tell el 'Oueili, pottery similar to Ubaid was found beneath the levels of Ubaid 1. This pottery was designated as Ubaid 0 phase by Marc Lebeau (1987) and, together with later Ubaid styles, seems to be related to Samarra pottery.[53] Blackham (1996: 6) writes that: "Lebeau's stylistic analysis of the Ubaid 0 ceramics concluded that 48 per cent of the Ubaid 0 ceramics are Samarran in style." This indicates that contacts between northern and southern Mesopotamia existed before the "Ubaid expansion." The Terminal Ubaid phase is also referred to as Ubaid 5 (Forest 1996). The Ubaid period in southern Mesopotamia lasted from Ubaid 0 to 5, that is from ca. 6500 till 3800 BC, much longer than in northern Mesopotamia where the Ubaid culture was adopted during Ubaid 3 and 4 (Blackham 1996: 6; Carter, Philip 2010: 2).

The Ubaid period can be described as a transitional stage between early agricultural villages and complex, urban societies. The Ubaid culture appeared on a vast area reaching from southern Mesopotamia to its northern parts, including the Levant, southeastern Anatolia, southwestern Iran, and the Arabian Gulf (Akkermans, Schwartz 2003: 154). The most important changes in respect to the Halaf culture that occurred within this period included the new style of pottery, the disuse of tholoi and appearance of large rectangular multi-roomed buildings which could accommodate an extended family, as well as the abandonment of mobile pastoralism. The Ubaid culture is called by Yoffee the "first and last unified material culture assemblage in Mesopotamia" (1993b: 265).

Despite common elements like pottery types, temple architecture (Gawra and Eridu), the presence of tripartite buildings or characteristic items like clay nails/mullers[54]

[53] For more on the relation between Samarra and Ubaid pottery, see, e.g., Oates 1960 and Blackham 1966.
[54] Clay nails, which are characteristic artifacts at Ubaid sites, have been found at Tepe Gawra, Yarim Tepe III, Arpachiyah, Khanijdal East (Tobler 1950: 169; Merpert, Munchaev 1993b: Fig. 11.9:1–5; Mallowan, Rose 1935: 22; Wilkinson, Monahan, Tucker 1996: 40). They were variously interpreted as wall pegs, paint grinders or sickle hand protectors, or model bulls' horns; however, their function as grinders seems to be the most probable since at Tepe Gawra the heads of these nails show some traces of wear, and all of the nails have been found in secular contexts (Tobler 1950: 169; Mallowan, Rose 1935: 90).

and clay sickles, there is also a significant regional variation (Carter, Philip 2010: 4–5). Not all sites displayed a full set of typical Ubaid features; thus, it seems that there was a selective implementation of Ubaid elements by the local communities. Nevertheless, the similarities in the material culture were interpreted as the result of the spreading of the Ubaid culture from Mesopotamia, which was regarded as the core of Ubaid. For some scholars (Mallowan, Rose 1935), the appearance of the Ubaid culture in the north was caused by the arrival of people from the south. However, the evidence from Tepe Gawra contradicts this assumption. There the transition from Halaf to Ubaid was gradual, with monochromatic painted pottery of the Ubaid style appearing for the first time in stratum XX, beginning to dominate in stratum XIX and growing in number in the succeeding strata, while Halaf pottery occurred in much smaller quantities until it completely disappeared in stratum XIII (Tobler 1950: 131–140). Clearly, the opinion that the people from the south invaded the north was the result of southern Mesopotamia being perceived as more developed. Karsgaard (2010: 57) writes that the assumptions about the expansion coming from the south are related to the history of archaeological thought rather than to the actual supremacy of southern Mesopotamia. More recent perspectives (Karsgaard 2010; Stein 2010) see northern and southern Mesopotamia as more equal, challenging the idea of the spread of innovations from the south as they advocate for more symmetrical relations between the north and south. In fact, many innovations seem to have originated in the north rather than in the south. Seals and sealings first appeared in northern Mesopotamia, and it seems that they were not used in the region of either Ur-Eridu or Hamrin at that time (Karsgaard 2010: 58; Stein 2010: 28). The public or ritual architecture also appeared in northern Mesopotamia (Tepe Gawra XIII), and it is not necessarily of later date than similar architecture from Eridu (phase VI). Moreover, it is also possible that southern Mesopotamia was more sparsely settled than some of the northern Mesopotamian areas (Karsgaard 2010: 58–59). Some regional differences are also visible in craft production; copper metallurgy seems to have first appeared in the north, copper smelting installations are known from Değirmentepe, and some copper tools have been found at Tepe Gawra and Arpachiyah, while in the south copper was unknown through the Ubaid period and only began to be used at the end of the 5th millennium BC (Stein 2010: 28). According to these more recent views, the changes in material culture were the result of interaction rather than migration.

Settlement structures

During the Ubaid period, the tholoi characteristic of the Halaf period went out of use, although a few circular buildings were present in the early levels of Tepe Gawra, Yarim Tepe III and in the middle levels of Khanijdal East. The tholoi were replaced by large multi-roomed buildings which could serve various types of activities.

Most of the Ubaid sites were rather small settlements with an area rarely exceeding 2–3 ha (Akkermans 1989: 341). Tell al-Hawa was among the largest settlements of the period, its area estimated[55] at 15 (Ball, Tucker, Wilkinson 1989: 31) or even 18 ha (Ball 1990: 31). The excavated Ubaid sites in the north were much smaller. Khanijdal East was a small village of ca. 1 ha in area (Wilkinson, Monahan, Tucker 1996: 20–21). The village had an open plan (although it must be kept in mind that the excavated area was small), there were remains of only one circular building of *tauf* with a small rectangular structure abutting its eastern wall, and just next to the western side of the building some more small, rectangular structures were located (Wilkinson, Monahan, Tucker 1996: 44; Wilkinson, Tucker 1995: 41). Tell Arpachiyah was not larger than 1 ha as well. The Ubaid levels TT1–4 at Arpachiyah have been found at the depth of 2.5 m, and Mallowan and Rose estimate that they span 100 years (Mallowan, Rose 1935: 11). Yarim Tepe III was also a small settlement – the area of the mound itself is only 1 ha; thus, the extent of the settlement could not have been much bigger. The mound of Tepe Gawra measures ca. 160 x 180 m (ca. 2.8 ha) but the actual occupied area varied between the phases (Akkermans 1989: 341).

The building structures varied from site to site in their plan, size, and quality. Houses, separated by narrow alleys, concentrated in the center of Arpachiyah, were of poor quality, built of mud brick, lumps of stiff clay, or *pisé*. Mallowan and Rose interpreted them as dwellings of "humble peasants." The rooms were quite small, no more than 2 m wide (Mallowan, Rose 1935: 11). The buildings in the underlying level TT5 were different: of better quality, more spacious and built of *pisé*. Such change is interpreted by the excavators as the result of the displacement of the Halaf people by the newcomers from the south (Mallowan, Rose 1935: 13–14). A different picture can be seen at Yarim Tepe III, where the Ubaid levels (found directly on top of the remains from the latest Halaf levels) have yielded eight multi-roomed buildings (referred to by the researchers as "complexes"). The structures consisted of a number of smaller and larger

[55] Intensive surface investigations aimed at determining the sizes of the settlement in successive periods were carried out by D. Tucker.

rectangular rooms arranged in an irregular plan. Some of the rooms seem to have a residential character since ovens and grinding stones were found inside. Ovens and hearths were also located in the courtyards and open spaces between structures. Many rooms belonging to these multi-roomed buildings could have served storage purposes as suggested by the findings of carbonized grain (Merpert, Munchaev 1993b: 225–235). A similar architecture was present at Tell Abu Dhahir. The site was abandoned after the Hassuna period and resettled in the Ubaid period. The 3.5-m-thick deposits suggest a long period of occupation; it seems that during the Ubaid period, Abu Dhahir was an important local center (Simpson 2007: 41). One of the structures discovered there was a cubicle building which had probably been used for storage. There was also a residential area with domestic structures with *tauf* walls and small rooms grouped around a larger room where traces of flint knapping have been found (Simpson 2007: 30–36, 38–43; Ball 1987: 79). Some interesting structures discovered at Tepe Gawra (strata XV–XVI) are characterized by the presence of long rectangular bins or stalls, so-called grill-based structures (Tobler 1950: 37–38). Stratum XV was functionally divided into an industrial area and residential areas, while in stratum XVI there was no such division (Tobler 1950: 39–40). The grill-based structures might have been used for storage of grain or pottery since ovens or kilns have been found in the vicinity, or for storage of wood which could have been used as fuel for kilns (Tobler 1950: 39). Grill-based structures are also interpreted as cereal-drying facilities; they were often located next to houses. This type of structure has also been unearthed in Syria: at Tell Ziyadeh on the Middle Khabur and at Tell Kurdu on the Amuq plain (Akkermans, Schwartz 2003: 161).

On most of the sites mentioned above (Khanijdal East, Arpachiyah, Yarim Tepe III, or Abu Dhahir), there were no tripartite buildings,[56] which are one of the characteristic features of the Ubaid period. The tripartite plan was used for houses and temples. The buildings varied in size; some of them were 70 m^2, others even 240 m^2. Such a large house could accommodate a big family. It consisted of a long rectangular hall with smaller rooms on each of its longer sides (Jasim 1985: 206–207). The central hall was T-shaped or cruciform and was most probably roofed,[57] as indicated by fragments of collapsed roofs

[56] According to Akkermans and Schwartz, tripartite structures are rarely encountered in Syria, and the only example comes from the last phases of Ubaid occupation at Tell Ziyadeh (Akkermans, Schwartz 2003: 161).

[57] Building D (level II) at Tell Abada is important in this respect because, as Jasim writes: "Large pieces of mud with impressions of reed were found in different places of the central cruciform hall, and indications that this part of the building had been roofed with timber and reed matting, covered with mud" (Jasim 1985: 21).

found at Tell Abada and Maddhur (Jasim 1985: 173; Roaf 1989: 92). The buildings were usually accessed from the ground level, as indicated by door sockets preserved *in situ* at Tell Abada. However, it seems that in Değirmentepe (eastern Turkey), where the buildings stood next to one another, the entrance was via the roof. In one of these buildings, the evidence of a staircase was found in the form of ascending beam holes. It is possible that some of the houses from Tell Abada, Maddhur, and Kheith Qasim had staircases leading to the second floor or to the roof; for example, in one of the small rooms in Building E (level II) at Tell Abada, sloping bricks, which had perhaps served as a foundation of a staircase, have been found (Carter, Philip 2010: 4; Gurdil 2010: 365–367; Jasim 1985: 21). A staircase might indicate the presence of an upper floor or simply that the roof was used for daily activities (Roaf 1989: 92–94).

The tripartite buildings were used for various purposes – some were just houses, others could have had some specialized functions. At Tell Abada, two buildings from level III, A (tripartite) and B (multi-roomed and rectangular), were probably related to the production of pottery. This may be indicated by large storage jars, large quantities of red ochre and grinding stones with traces of it, and two large kilns located nearby (Jasim 1985: 17–18). Building A from level II could also have served some special function as it displayed some characteristic features: although there were no pedestal, altar, or hearths which might indicate a temple, under the floors the highest number of graves has been discovered, there was pottery inside but no domestic items, and moreover, this building was the only one in which clay tokens ("counters") have been found (Jasim 1985: 173–174).

Tripartite buildings of special function were also found in some phases at Tepe Gawra. The site was excavated on a large scale, which yielded a lot of information about the layout of the settlement. Tripartite buildings were present in strata XIX, XVIII, XV, XIV, and XIII. In the earliest Ubaid level, stratum XIX, three secular buildings and a temple were found. One of the secular buildings was a large, well-planned private house; the other two were smaller. The temple consisted of a large, long and rectangular room and some smaller ones attached to its longer walls and to its shorter eastern wall (Tobler 1950: 45–46). In stratum XVIII, a temple[58] and a complex of irregular, more or less

[58] Akkermans, however, does not think that the tripartite building from stratum XVIII should be considered a temple (Akkermans 1989: 343–344). The structure, which looks no different from the other tripartite buildings, was built over a very similar structure from stratum XIX (Tobler 1950: 45) which has been interpreted as a temple.

rectangular rooms and elliptical ovens were found (Tobler 1950: 43). The long central room of the temple was flanked by smaller rooms on both its longer sides (Tobler 1950: 44). Buildings from stratum XVII formed three groups: two stood close to each other, and the third was located to the north-west. All of the buildings consisted of rectangular rooms arranged on an irregular plan. Also, two circular buildings were discovered in this layer (Tobler 1950: 42), and the Southern Tholos contained two unfurnished graves (Tobler 1950: 43). In stratum XVI, buildings and other structures were mixed, and the space was not divided into residential and industrial areas. The structures formed two clusters: one was located in the north-western part of the mound where a large house with storage bins and kilns was found, and the second in the south-eastern part where four private houses with an irregular plan stood. One of these houses had a large circular underground kiln attached to its wall. Tobler suggests that the house belonged to a potter and that its two long rooms were used as storerooms for pottery (Tobler 1950: 40–41). Stratum XVA contained grill-based structures and small rectangular dwellings, but this time the north-western part of the site was more densely occupied (Tobler 1950: 39). In stratum XV, the division into residential and industrial areas was clear. There were four private houses in the south-eastern part of the site, two of them containing single but quite spacious rooms. The other two were larger and featured a long rectangular court with rooms on both longer sides (Tobler 1950: 37–38). The kilns, ovens, and long narrow enclosures (6 m long, 0.5 m wide on the inside) were located in the north-western part of the mound. These grill-based structures might have been used for the storage of pottery or perhaps wood, used as fuel for the nearby kilns and ovens. The other interpretation by Tobler is that they were used for the storage of grain (Tobler 1950: 39). Similar structures have been encountered quite often in the Ninevite 5 period, and usually, they are interpreted as being related to the storage or drying of grain. In stratum XIV, there were only stone foundations of a large, symmetrical tripartite structure. In one of the rooms, there was an oven built of mud bricks (Tobler 1950: 36). Stratum XIII yielded three temples located around a large courtyard. The buildings were well planned, and their walls were decorated with niches. Access to the temples was indirect, unlike in the temples of later strata (Tobler 1950: 31).

Procurement of raw materials and contacts with other regions

Contacts of the Mesopotamian sites with distant regions are evidenced not only by the presence of Ubaid-style pottery but also by the use of raw materials from those

regions. In northern Iraq, the most abundant repertoire of foreign raw materials occurred at Tepe Gawra where they were used for the production of various artifacts: beads, stone vessels, mace-heads, and seals. Initially (strata XIX to XVI), the only foreign materials were obsidian and carnelian used for the production of beads, but in stratum XIII, serpentine became more common (Tobler 1950: 192, Catalogue of the illustrated specimens). Serpentine, steatite, alabaster, and grey breccia were used in the production of stone vessels. In earlier strata, local materials such as granite and Mosul alabaster were used as well (Tobler 1950: 208–209, Catalogue of the illustrated specimens). Obsidian was also used at Yarim Tepe III for the production of composite sickles and beads; the other foreign material present at this site was hematite used for maces[59] and beads (Merpert, Munchaev 1993b: 237–240). Hematite also occurred at Tepe Gawra where it was used to produce mace-heads, although local materials such as marble and basalt were used for this purpose as well (Tobler 1950: 203–204). The seals found at Tepe Gawra were made of a variety of materials including serpentine, black steatite, brown carnelian, and local materials such as limestone or marble. Of these materials, serpentine and steatite occurred the most often (Tobler 1950: 221–252). Steatite, serpentine, lapis lazuli, agate, carnelian, hematite, and obsidian do not occur naturally in the land of Mesopotamia. According to Tobler, lapis lazuli, alabaster, steatite, and serpentine were imported from the territory of Iran. Marble occurs in the vicinity of Mosul, while basalt and granite are present in the neighborhood of Tepe Gawra (Tobler 1950: 176, 200).

The other imported material was copper. It was known in northern Mesopotamia also in earlier periods, but it was very rare. At Tepe Gawra, it appears for the first time quite early (stratum XVII) but then is absent until the last phases of the Ubaid period (stratum XIII and succeeding) (Tobler 1950: 211–212). Copper has also been found at Arpachiyah, where a copper chisel was dated to the Ubaid period; Mallowan and Rose also mention two examples of copper pins but without providing any information on whether these artifacts belonged to the Ubaid or Halaf periods (Mallowan, Rose 1935: 104).

Some contacts between various regions can also be attested by the trade/exchange of bitumen and pottery. Bitumen from the area of Babylon and from northern Iraq was probably transported to the north-west, as suggested by the finds from Kosak Shamali on the Euphrates (Conan, Nishiaki 2003: 302–303). Analyzes of pottery also indicate the

[59] The original publication in Russian lists “гематитовые булавы” (hematite maces), which were incorrectly translated to English as “hematite fibulae” in the reprint of the article in Yoffee and Clark 1993.

existence of some kind of relations between different regions. For instance, pottery found at the shores of the Persian Gulf (in Saudi Arabia, Qatar, Bahrain) originated from southern Mesopotamia; however, it might rather have been the personal belongings of people traveling to these regions than products of exchange (Oates et al. 1977: 232–234). Ubaid pottery found in northern Iraq seems to have been exchanged between settlements, similarly as was the case during the Halaf period (Davidson, McKerrell 1980: 164).

Food sources – land use

There is very little evidence of food production in northern Mesopotamian Ubaid settlements. The reports of excavations at Tepe Gawra or Yarim Tepe III do not mention any plant or animal remains. Information from Arpachiyah is very laconic, only mentioning that almost all of the grains found in the well of TT4 were identified as barley (Mallowan, Rose 1935: 15). However, some indirect evidence for the use of plants as a food source is available. Sickle blades and hoes have been found at Yarim Tepe III, while Khanijdal East has yielded sickle blades as well as querns with a shallow concave working surface (Merpert, Munchaev 1993b: 237–240; Wilkinson, Monahan, Tucker 1996: 40, 43). Interestingly, these types of artifacts have not been found at all the sites; there is no mention of sickle blades or querns at Tepe Gawra, Arpachiyah, or Abu Dhahir. If the interpretation of grill-based structures as related to cereal-drying or storage is correct, then there would be evidence of grain processing at Tepe Gawra. All these data (except for the hoes from Yarim Tepe III) are not, however, indicative of agriculture but only of the use of plants as a food source.

A little bit more is known about the animal economy. Faunal remains from Khanijdal East belonged to sheep/goats,[60] cattle, and pigs. The remains of cattle and pigs

[60] It is also possible that at some sites, sheep were also used for the production of wool. Sudo (2010) indicates that, based on the archaeozoological data, the exploitation of wool-bearing sheep became more common after the Chalcolithic period, and Archaic texts from Uruk mention wool-bearing sheep. Sudo (2010) suggests that the Chalcolithic period was very important for wool production, although wool could have been used on a much smaller scale also in earlier periods. Some changes visible in spindle whorls might indicate the beginnings of wool production. Sudo analyzed the size and weight of spindle whorls from Tell Kosak Shamali (on the eastern bank of the Upper Euphrates in northern Syria) and Telul eth-Thalathat II. The size and weight of spindle whorls depend on the material being spun and the expected finished product; thus, fine and soft fibers like wool require lighter spindle whorls while stronger fibers like flax the heavier ones. The weight of the spindle whorls from Tell Kosak Shamali, which were dated from the Early Northern Ubaid to the Middle Uruk period, indicates that they were used for spinning wool, and the share of lighter spindle whorls increased over time. Also, the archaeozoological data show changes in herds' structure, indicating a bigger interest in the milk and wool exploitation during the Uruk period. The weight of the spindle whorls from Telul eth-Thalathat decreased over time as well. However, it might be

were the most numerous. Bones of some wild species (gazelle) were also found, but they constituted a very small fraction of the assemblage, nevertheless indicating that hunting might have been practiced (Wilkinson, Monahan, Tucker 1996: 43–44; Wilkinson, Tucker 1995: 42). Sling pellets, which are usually interpreted as a hunting tool, were found at Khanijdal East and Tepe Gawra (Wilkinson, Monahan, Tucker 1996: 39; Tobler 1950: 173). At Tell Mashnaqa, a site located on the left bank of the Khabur, besides the exploitation of domestic capridae, pig, and cattle, wild animals (gazelle, onager, and wild cattle) were also hunted. Their remains constituted quite a high percentage of the faunal sample – 45%. Also, the remains of some riverine (turtles and waterfowl) and steppic (hare) fauna were found there (Zeder 1994: 118). Tell Mashnaqa also yielded two fragments of terracotta models of long flat-bottomed boats, dated to ca. 5000 BC (Thuesen 1994: 112). The boats could have been used as a means of transport or perhaps for fishing.

In the Halaf period, the proportions between wild and domesticated species varied quite widely from site to site. In the Ubaid period, the situation seems more or less similar. The archaeozoological studies are scarce, and available data paint a dichotomous picture. At most of the sites, domesticated animals constituted the majority;[61] still, at others, hunting played an important role (Grossman, Hinman 2013: 213, Table 10). The change in the ratio of wild to domesticated animals occurred, however, at Tell Zeidan in the Balih valley and Tell Kurdu in the Amuq valley, where the wild animals constituted in the Halaf period 52% and 23% respectively, while in the Ubaid period their significance decreased, and the domesticated animals became predominant, representing no less than 90% of identified bones (Grossman, Hinman 2013: 212–213, Tables 9, 10).

Burial customs

The burial customs of the Ubaid period did not differ much from the ones practiced in the Halaf culture. In the Ubaid period, the cemeteries, which first appeared in the Halaf period, became more common, graves of simple construction were introduced, and cremations known from the Halaf period were not practiced anymore.

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an exaggeration to regard this phenomenon as typical for the whole period – it might be that such a situation occurred only on these two sites (Sudo 2010: 170–176).

[61] At Ziyadeh, in ca. 4700 BC, wild animals dominated, constituting 57% of the faunal remains, while some time later (ca. 4350 BC), the proportion changed, and wild species represented 34% of all animals (Grossman, Hinman 2013: Table 2).

It seems that in the previous period, the area of the settlement was reserved mainly for burials of children, while adults were buried outside of it (perhaps at cemeteries like the Halafian one at Yarim Tepe I). This trend seems to have continued also in the Ubaid period (Akkermans, Schwartz 2003: 175; Brereton 2011: 219–221; Hole 1989: 174–176). For example, at Tepe Gawra,[62] most of the graves discovered in almost all of the Ubaid strata (except stratum XVII)[63] belonged to children (Tobler 1950: 111). Juvenile burials prevailed also at Yarim Tepe III, where four burials have been found inside the rooms (on the floor, under it, or in the fill) and two others in the courtyards (Merpert, Munchaev 1993b: 235), but at Abu Dhahir the situation was opposite[64] (Merpert, Munchaev 1993b: 235; Simpson 2007: 36). However, at the Ubaid cemetery at Tell Kashkashok II (located in the Khabur basin, ca. 17 km to the north-west from Hasake), most of the skeletons belonged to adults (Brereton 2011: 544–555).

In Arpachiyah, a cemetery containing 45 graves was found (five other graves were located in various parts of the site). It was probably used for a short period of time since the graves do not overlap, although this could also happen if the positions of the graves had been marked on the surface so that people would know which place was already occupied (Mallowan, Rose 1935: 8). Unfortunately, the sex of the dead was determined only in a few cases. The cemetery at Tell Kashkashok II (the mound was used for this purpose during the Ubaid and Post-Ubaid periods) was much bigger, but only 63 out of more than 100 graves have been registered (Koizumi 1996). It is possible that a cemetery existed also at Abu Dhahir since, in addition to six excavated graves, the shafts of five further graves were visible in section (Simpson 2007: 36).

As in the previous period, the bodies of the deceased lay on their sides in contracted position, some might have been bound originally. At Arpachiyah and Yarim Tepe III, some of the dead were laid on or wrapped up in matting (Mallowan, Rose 1935: 36; Merpert, Munchaev 1993b: 235). In the case of Tepe Gawra, the inhumations usually had no cover of any kind but starting with stratum XIII, a cover in the form of matting, *libn* bricks, stone slabs, or plaster appeared (Tobler 1950: 107). At Yarim Tepe III, bodies of two juveniles were covered with large fragments of pottery vessels (Merpert, Munchaev

[62] The number of the deceased was low considering the long period of occupation; thus, it is probable that there was a cemetery in the vicinity of the mound which has escaped the attention of archaeologists. The cemetery would have probably contained mainly adult burials (Tobler 1950: 111–112).
[63] Some of them have been closely associated with the temples (Tobler 1950: 104–106, 122–123).
[64] It needs to be noted that at Abu Dhahir, only six graves dated to the Ubaid period have been discovered. Such a small number of burials does not allow for any reliable conclusions.

1993b: 235). The dead could have been buried in simple inhumation graves, which were the dominant type at Arpachiyah, or in slightly more elaborate ones. At Abu Dhahir, graves had a form of a deep shaft with a side-chamber; at Tepe Gawra, there were urn burials—the remains were deposited in open vessels closed with clay, a basket, a stone, or a mud-brick, or in capsules formed of two urns (this was the second most popular type of grave at the site in the Ubaid period; more frequent were only inhumations[65])—and graves enclosed by low walls made of *pisé* (Simpson 2007: 23–28; Tobler 1950: 106). At Tell Kashkashok II, the graves consisted of a vertical shaft and a side chamber dug at the bottom. The chamber was separated from the shaft by a mud-brick wall (Koizumi 1996: 29); this type of grave occurred also at Tell Mashnaqa (Thuesen 1994: 112; Akkermans, Schwartz 2003: 176) and is similar to the ones found in the later Ubaid period at Tepe Gawra (since stratum XIA). Fractional or partial burials were also practiced in the Ubaid period; in this case, only a part of the body was buried, for example, a skull, or some parts of the body, such as head, arms, legs, or ribs, were missing. Fractional burials have been encountered at Tepe Gawra and at Arpachiyah where they constituted a third of all burials discovered (Tobler 1950: 110–111; Mallowan, Rose 1935: 36–38).

Most of the graves were poorly furnished; objects were placed in the vicinity of the body. The grave goods consisted most often of pottery vessels, but sometimes other items were also buried together with the dead, including beads, stone celts, obsidian blades, pendants, stone vessels, stone palettes, spindle whorls, animal figurines, and terracotta rattles (Mallowan, Rose 1935: 34–42; Simpson 2007: 23–28, 36–38; Tobler 1950: 115–121). The burials did not reflect the status or rank of the deceased, which is interpreted as negative evidence of elite formation.[66]

Settlements' distribution and dynamics

In the area of Tell 'Afar, many sites might have been continuously occupied since the Halaf period: 15 out of 24 sites from the Halaf period show traces of Ubaid occupation, and 11 of them have also yielded potsherds identified as Uruk. The average number of contemporaneously occupied sites varied between 14 and 16 (Table 7). Almost

[65] At Gawra, the change in the frequency of specific types of burials appears in stratum XII which shows a significant predominance of urn burials. Inhumations have been found in every stratum but most often in strata XVIII–XV (Tobler 1950: 106–107).

[66] Signs of elite formation are visible on the Susiana plain towards the end of the Ubaid period (corresponding to the Susa A or Susa I period – end of the 5th millennium BC) (Stein 2010: 32).

all of the sites which were either settled continuously or resettled lay on the Tell ’Afar plain (Fig. 9).

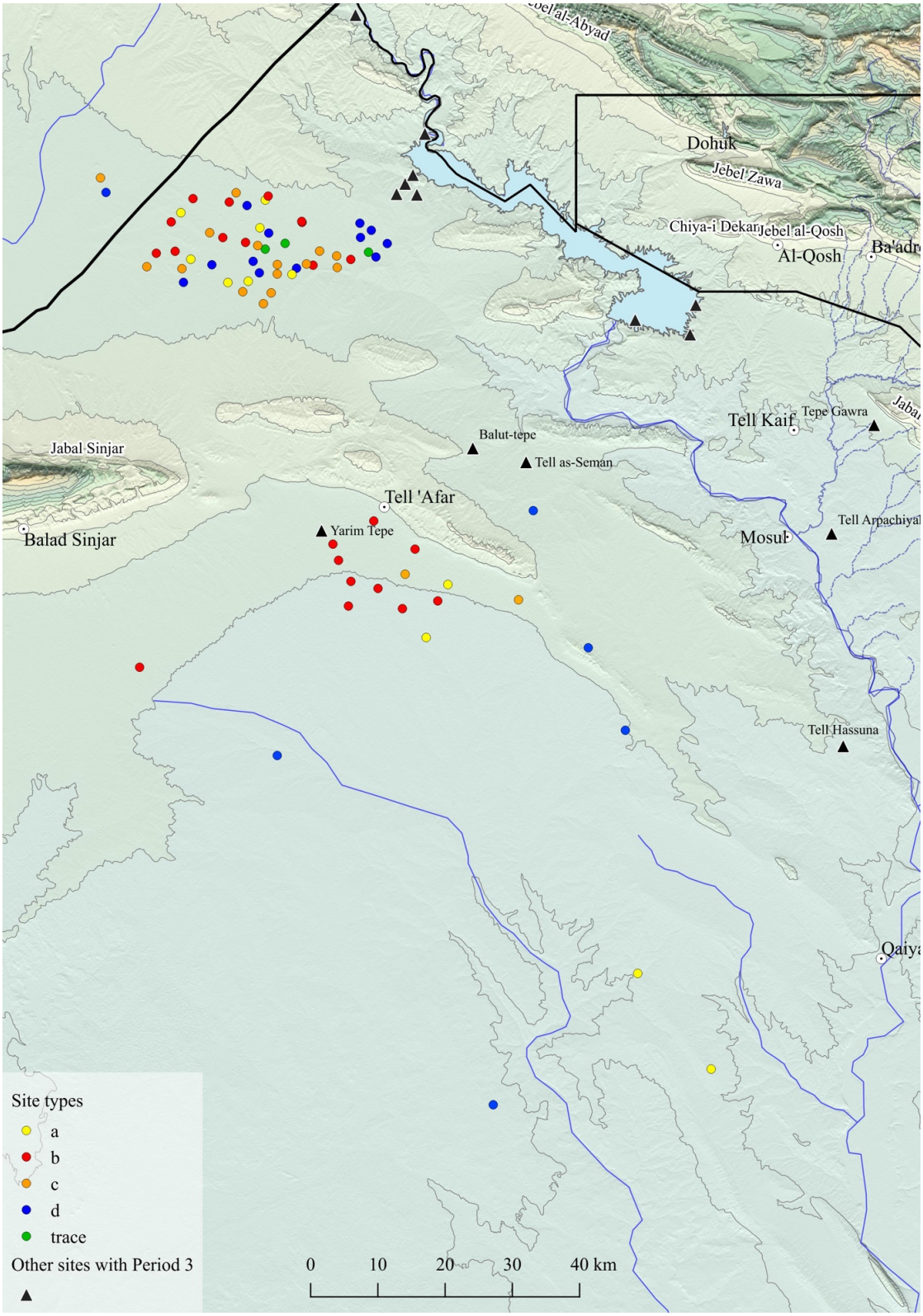

Fig. 9. Ubaid-period occupation in the regions of Tell Hamoukar, Tell al-Hawa, and Tell ’Afar (map: J. Mardas)

Two sites to the north-east of Hatra continued to be settled in the Ubaid period but were abandoned before the later period. Of the nine sites established or resettled during the Ubaid period, seven were abandoned before its end, and the remaining two yielded potsherds of the Uruk period. Most of the sites which had been settled and abandoned during the period were located quite far from the Tell 'Afar plain; perhaps they were camps or seasonal sites rather than permanent villages. Other similar sites were located to the east of the Tell 'Afar plain. Only one of these sites has yielded potsherds from the Uruk and Ninevite 5 periods; the rest can be identified as belonging to *type d* in Dewar's typology. The difference between the rates of establishment and abandonment is small, suggesting a quite stable settlement pattern.

Table 7. Ubaid-period occupation in the Tell 'Afar region

a	*b*	*c*	*d*	Occ_{abc}	Occ_{d+}	Occ_{d-}	Occ_{d}	*Occ*	*Min. no of sites at period's*		*p**	E_{occ}	A_{Occ}	*Total no of sites*
									beginning	*end*				
4	11	2	7	14	1.56	2.55	2.05	16.05	15	13	800	0.011	0.014	24

Table 8. Ubaid-period occupation in the Tell al-Hawa region

a	*b*	*c*	*d*	Occ_{abc}	Occ_{d+}	Occ_{d-}	Occ_{d}	*Occ*	*Min. no of sites at period's*		*p**	E_{occ}	A_{Occ}	*Total no of sites*
									beginning	*end*				
7	11	14	13	21.5	6.74	4.55	5.65	27.15	18	25	800	0.034	0.025	45

In the case of the North Jazira Survey, again there is no significant difference between the settlement patterns of the Halaf and Ubaid periods. The settlements were more or less evenly dispersed over the surveyed area. The sites were still small. Interestingly, the occupation could have shifted within a single site, like in the case of site no. 66, composed of two mounds, one of which was formed during the Halaf and the other during the Ubaid period, with only a little spatial overlap (Wilkinson, Tucker 1995: 40). In the region of Tell al-Hawa (Table 8), there was a slightly higher number of sites of *type b* compared to the previous period; 11 sites could have been occupied during the whole Ubaid period or resettled, as suggested by the presence of Halaf and Uruk potsherds. Also, a number of new sites appeared, and a few older locations were occupied again. Uruk potsherds have been encountered on many of those sites, suggesting that they were occupied in the following period as well. In total, fewer sites were abandoned within

this period than before. There were 45 Ubaid sites in total but, based on Kintigh's formula, the average number of contemporaneously occupied sites varied between ca. 21 and 27. The difference between the establishment and abandonment rates suggests some changes in the settlement pattern. The rate of establishment was higher, and it is also clear that plenty of new settlements appeared during the period.

The regions of Tell al-Hawa and Tell 'Afar show different settlement dynamics. In the region of Tell al-Hawa (Table 8), the difference between the establishment and abandonment rates is quite high, suggesting a bit more dynamic pattern. The high establishment rate might indicate a developing settlement with a large number of new villages. There is also a moderate percentage of abandoned settlements (44.4%). In the area of Tell 'Afar (Table 7), the situation is opposite; the rate of abandonment is higher than the rate of establishment, but as the difference between them is small, it can indicate quite a static settlement pattern in this area. The percentage of abandoned sites (45.8%) is very similar to the one in Tell al-Hawa. It seems that the settlement in the region of Tell al-Hawa was developing quite well in the Ubaid period, with many sites perhaps continuously occupied and plenty of newly-established ones, while the region of Tell 'Afar showed some signs of stagnation after the Halaf period. The sites occupied in the Halaf period were settled also throughout the Ubaid period, but the number of new sites was low.

In the Tell Hamoukar region, there were only two sites with Ubaid material, in contrast to the 13 sites of the Halaf period. These two sites were new locations. Jason Ur suggests that the smaller number of sites might indicate a decrease in the settlement mobility; the settlements in the previous period could have been shifting their location every few generations, while in the Ubaid period, it is possible that a village remained in the same place for a longer time, perhaps even for the whole or throughout most of the period (Ur 2010: 95–96). The application of Kintigh's formula to the Ubaid period is not very useful. Since there are only two settlements, the number of contemporaneously occupied sites could be one or two.

The settlement pattern of the Ubaid period in the area to the east of the Tigris does not show significant differences in comparison to the Halaf period. In the LoNAP area, the number of settlements increased to 58. A few settlements were located to the north of the Dekan mountains and to the south of Al-Qosh. A slightly higher density of occupation was noticed to the south of Ba'adreh. The most numerous settlements occurred in the area of Tell Gomel and in the eastern part of the Navkur plain, to the south-west of Rovia. The

number of settlements in the area bordering the Eski Mosul Dam Salvage Project decreased (Iamoni 2017).

To the south of the UGZAR area, the EPAS has identified so far eight sites in the southern part of the concession, including Tell Surezha, Tell Baqrta, and Tell Sheena. As in the case of the LoNAP survey, there were no significant changes in the location of the sites; some were abandoned, while others could have continued to be occupied. Also, the number of settlements did not change (Ur 2017). In the area to the south-east of the UGZAR survey, the ASK has recorded so far only one Ubaid site (Pappi 2017).

Ubaid sites are also known from the Rania plain; Al-Soof (1970) mentions nine, two of which were occupied also in the Halaf period. In the area of Tell 'Afar and Sinjar, Al-Soof (1968) listed 11 and 14 sites respectively. Much smaller numbers of Ubaid sites (from one to three, 19 in total) were ascribed to the regions of Shirqat, Daquq, Erbil, Kirkuk, Hamdaniya, Chamchamal, Shurra, Qushtepe, Kopri, and Zakho. Only eight of these sites were occupied also in the Halaf period. Uruk pottery, however, was found on plenty of these sites (Al-Soof 1968; Al-Soof 1970); unfortunately, it is not clear whether it was Early or Late Uruk.

On the basis of evidence from Yarim Tepe III, Tepe Gawra, and Arpachiyah, Merpert and Munchaev assumed that during the Ubaid period, people living in the region of the Sinjar plain and other areas of northern Mesopotamia preferred to build new settlements atop mounds formed by earlier villages. It seems that the transition from Halaf to Ubaid was smooth, at least at these sites (Merpert, Munchaev 1993a: 184). This observation is confirmed by the results of Ibrahim's (1986) survey in the Sinjar area around Tell 'Afar, where 72% of all Ubaid settlements were located on sites previously occupied in the Halaf period. In the case of the Tell al-Hawa survey, this rate is lower and equals 51%. The smooth transition from Halaf to Ubaid might also be indicated by potsherds from Khirbet Derak (in the region of the Eski Mosul Dam) which were identified as "transitional"[67] between Halaf and Ubaid, and where, as Forest suggests, the Ubaid culture was gradually adopted by the Halafian community (Forest 1987: 84). In

[67] The transitional assemblage was characterized by the presence of three groups of pottery: firstly, Halaf pottery from the later part of the period, secondly, pottery of reddish ware with orange-brown surfaces, hard and well-fired, recalling the Halaf fabrics but decorated with loose and geometric patterns of the Ubaid style, and, thirdly, Ubaid pottery proper with yellowish ware and common geometric pattern (Forest 1987: 84). Olivier Nieuwenhuyse distinguishes a Halaf-Ubaid Transitional phase (HUT) which is characterized by pottery with "polychrome painted decoration strongly reminiscent of the Halaf but executed in patterns more common for the Ubaid" (Mühl, Nieuwenhuyse 2016: 29). HUT pottery is known from several sites in Syria (Chagar Bazar, Tell Masaikh, Tell Kurdu, Tell Zeidan) and Iraq (Tepe Gawra). Moreover, local variations of HUT are known from Tell Begum on the Shahrizor plain (Mühl, Nieuwenhuyse 2016: 43).

the case of Yarim Tepe III, there was no hiatus between Halaf and Ubaid, but the ground plan of the latter period was much different, because the latest Halafian structures were dismantled and the top of the site was leveled to prepare the ground for the Ubaid settlement (Merpert, Munchaev 1993a: 168).

The UGZAR area

The UGZAR project has recorded 19 sites dated to the Ubaid period. Most of the Ubaid settlements in the UGZAR area have been found in the vicinity of streams or rivers, usually at a distance of 0 to 130 m; only in one case (US218), the settlement was located slightly further from the stream, ca. 600 m. Most of the sites lay in open, flat areas with good agricultural conditions. They were concentrated in four areas: on the Navkur plain, in the Karabak valley, in the south-eastern part of the Harir plain, and in the nearby Qadiana valley (Fig. 10). Three sites were isolated: US163 on the eastern bank of the Greater Zab, near the confluence of the Kore stream and the Greater Zab, US139 on the eastern bank of the Greater Zab, ca. 10.5 km to the south-west from the confluence of the Greater Zab and the Bastora, and US077 at the foothills of the Bardarash mountains, on the Gume Zard-i stream. All three sites have moreover yielded potsherds from the Halaf period, and US163 also from the following LC period.

As has been already mentioned, four clusters of settlements were observed. The first one was located in the north-eastern part of the Navkur plain. There were three sites there, two of which (US009 and US011) also yielded pottery from the Halaf period. US009 seems not to have been resettled again in LC1–2, but US011 could have been occupied for some time in LC1–2 (although there was only one potsherd from this period at the site). The third site, US006, was later repeatedly resettled and abandoned till modern times.

A small concentration of Ubaid sites appeared in the vicinity of the modern city of Rovia. It consisted of four sites: US021, US027, US033, and US025. Two of them, US021 and US027, also yielded pottery from the previous period. Sites US021, US027, and US033, located 3.5 km towards the south-west, were abandoned during the Ubaid period. Only US025 had pottery from the LC1–2 period. Each of these sites yielded only one Ubaid potsherd, which might be due to the fact that all of them have been later occupied for a long time. Only US025 had a form of a high tell (ca. 20 m high, with the total area of ca. 3.4 ha). US033 and US027 were very small; their total areas were 0.7 and 0.5 ha

respectively. US021 was larger; the whole site covered ca. 4.8 ha, and since only one Ubaid sherd has been found, it is difficult to estimate its settled area in the Ubaid period. Although only US025 continued to be occupied or was resettled in LC1–2, the area was not deserted in LC1–2, and a few new sites appeared in the vicinity of US025.

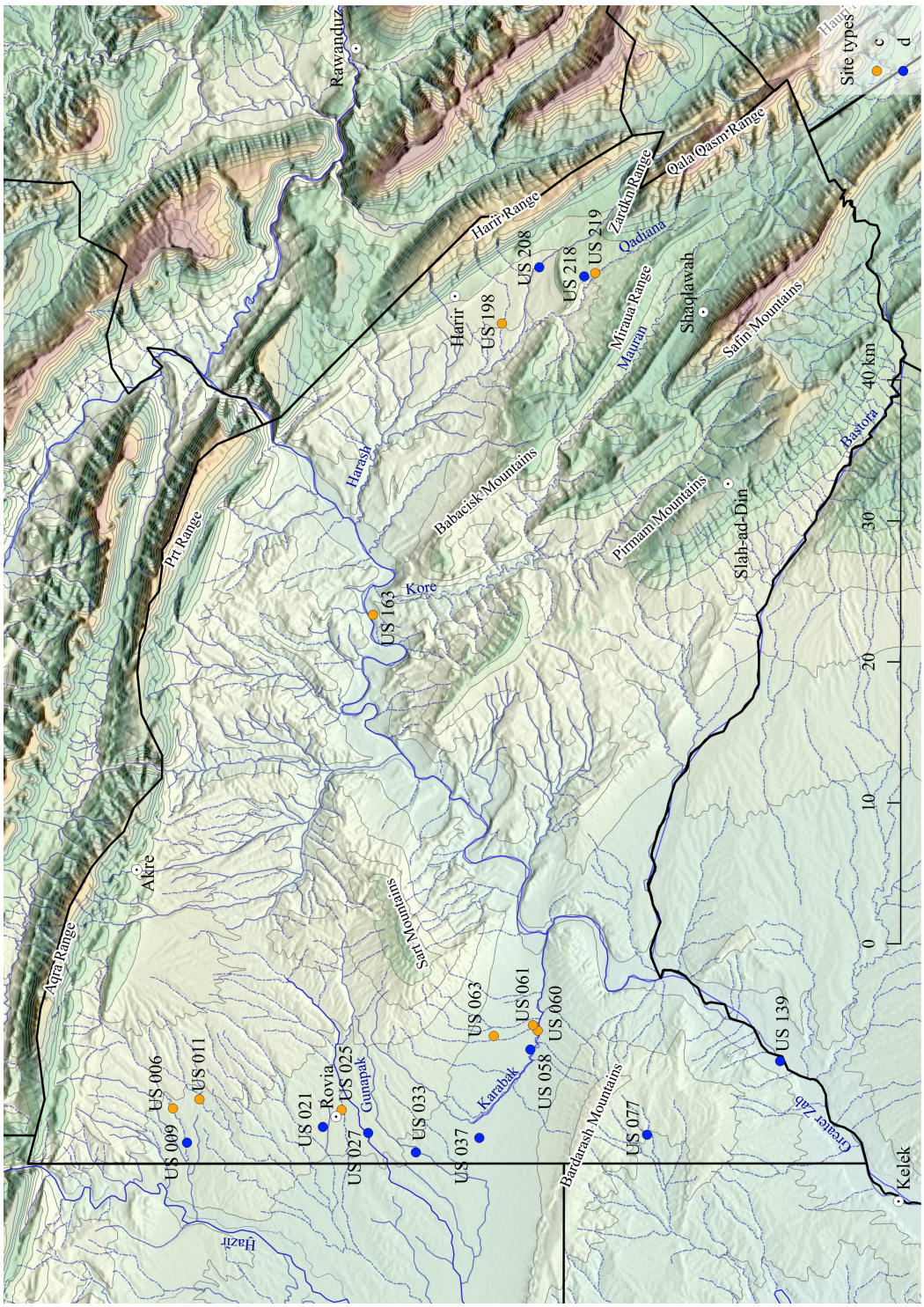

Fig. 10. Ubaid-period occupation in the UGZAR area (map: J. Mardas)

The third cluster was located in the Karabak valley. In the case of US060, which was extremely close to US061, a site which has yielded pottery from both the Hassuna and Halaf periods, it is possible that the settlement of US061 was just shrinking in some periods and expanding in others. Both sites lay so close to each other that they could have been one settlement in the past. They were both occupied in LC1–2. There were two other sites: US058 was located slightly to the west, and US063 lay to the north-west. Site US063 also yielded pottery from the LC1–2 period, while US058 was abandoned and not resettled till the Parthian times.

On the Harir plain, there were only two sites, namely US198 and US208. Site US198 yielded the largest collection of Ubaid sherds (partly because a high voltage pylon had been erected at the site, and the highest density of potsherds occurred in the area damaged by its construction). Further south-east, on the Qadiana plain, two more sites were identified: a resettled Hassuna site US218 and US219 which yielded potsherds from the LC1–2 period as well.

On three of the Ubaid-period sites, US139, US163, and US063, obsidian fragments were collected. However, since the sites were also occupied during other prehistoric periods, it is impossible to determine to which period these obsidian fragments belong. In the case of US139, it is either Halaf or Ubaid, because after Ubaid the site was abandoned till modern times.

Nine of the Ubaid sites also yielded pottery from the following LC1–2 period; they might have been either settled continuously or resettled. Most of them were located in the Karabak valley and on the Navkur plain.

According to Nieuwenhuyse (2017a), there is no Halaf-Ubaid Transitional pottery in the UGZAR area; thus, it might be suggested that the area was resettled in the Ubaid period after a possible abandonment following the Halaf period. According to Kintigh's formula, the average number of contemporaneously occupied sites varied between 4.5 and 6.87 (Table 9); however, these numbers might be underestimated since the calculations take into account only the number of sites of *type c* or of *type c* and *type d*. The rate of establishment is much higher than the rate of abandonment, which may suggest a bit more dynamic settlement.

Quite many Ubaid-period sites in the UGZAR area were possibly continuously occupied until LC1–2. There is also a high percentage (68%) of the Ubaid sites which were located in previously occupied places. This value is similar to the one in the Tell

'Afar area and corresponds with the assumptions of Merpert and Munchaev mentioned above.

Table 9. Ubaid-period occupation in the UGZAR area

a	*b*	*c*	*d*	Occ_{abc}	Occ_{d+}	Occ_{d-}	Occ_{d}	*Occ*	*Min. no of sites at period's*		*p**	E_{occ}	A_{Occ}	*Total no of sites*
									beginning	*end*				
0	0	9	10	4.5	4.74	0	2.37	6.87	0	9	800	0.024	0.013	19

Conclusions

The regions of Tell al-Hawa and Tell 'Afar show slightly different settlement dynamics. In the former, the establishment rate is higher than the abandonment rate, suggesting a growing number of settlements, which is also visible in the number of newly established sites. In the latter region, the difference between the establishment and abandonment rates is smaller, which can indicate a more stable, less changeable pattern. The highest number of Ubaid settlements was recorded in the region of the LoNAP—58 sites have been identified so far. The region of Tell al-Hawa also had plenty of Ubaid settlements, 45 in total. The EPAS has listed only eight Ubaid sites so far, but considering the fact that only a small part of the area has been investigated and that the area was suitable for agricultural communities, it can be expected that the total number of Ubaid settlements will be much higher. The lowest number of settlements occurred in the Tell Hamoukar survey area, where only two Ubaid sites were recorded. It is especially surprising when compared to the nearby (the survey borders are only 3.5 km apart) Tell al-Hawa region. The number of Ubaid sites in the UGZAR area was rather low, and the settlements were not regularly dispersed throughout the area but occupied good agricultural ground on the Navkur plain and in the Karabak and Harash valleys, while more hilly and mountainous areas were deserted.

On the basis of the recent results of the EPAS and LoNAP projects, it can be said that the settlement patterns in these areas resemble those from the Halaf period. The largest change occurred in the Tell Hamoukar region where the settlement was significantly reduced. In the regions of Tell al-Hawa and Tell 'Afar, there were no big changes in the number of settlements in the Halaf and Ubaid periods. The settlement dynamics in the Tell 'Afar region during the Ubaid period seem to resemble those from the Halaf period, but in the case of Tell al-Hawa, the Ubaid settlement shows some

differences compared to the Halaf period. In the UGZAR area, the number of sites and the settlement dynamics seem to be similar to those from the Halaf period. There is no HUT pottery in the UGZAR area, and thus it is possible that after the Halaf period, the area was abandoned for some time. In the case of other regions, it is unclear whether HUT pottery occurred there or not.

The differences between the settlement patterns of the Ubaid and Halaf periods are rather small. The changes in settlement, subsistence, and material culture are minor in comparison to the Halaf period. The tholoi were not used anymore, giving way to rectangular structures; however, it should be kept in mind that rectangular buildings were present also in the Halaf period, sometimes together with circular ones. One of the characteristic features of the Ubaid period was the appearance of large tripartite buildings, which are interpreted as dwellings of extended families. Such structures could be a sign of some social changes. The food sources have not changed; plants and animals,[68] both wild and domesticated, were eaten, and hunting still played an important role. Also, the contacts with distant regions continued, as attested by the presence of various exotic raw materials. The relations within the region might be evidenced by the trade of bitumen and pottery. Perhaps the most significant change in the Ubaid period was the appearance of temples, more common presence of cemeteries, and more unified burial customs. The standardization of burial customs might indicate closer relations between people dwelling in different areas. The appearance of cemeteries could suggest a stronger identity of the people and also a more stable relation with a particular place. The emergence of temples might have been a starting point for the centralization and development of power, while the existing routes between northern and southern Mesopotamia and other regions created foundations for the Uruk expansion that occurred in the later period. The use of seals,

[68] The use of "secondary animal products" is confirmed already in the Neolithic period in north-western Anatolia (6th and 7th millennia BC) (Evershed et al. 2008), but the increase in the consumption of products of this kind seems to have occurred in the Chalcolithic period (Greenfield 2010: 45–46). It should also be mentioned that not all "secondary products" must have been adopted at once (Greenfield 2010: 46). In the case of northern Iraq, not much faunal data is available. Greenfield points out that "the earliest unambiguous artefactual evidence for milking is quite late (Early Dynastic period of southern Mesopotamia, ca. 2600BC) and occurs in the form of visual representations, such as an inlaid limestone milking frieze from the Ninḫursag Temple at Tell al-Ubaid depicting cows being milked from behind" (Greenfield 2010: 33). In the case of the exploitation of sheep for wool, Sudo's (2010) analysis of spindle whorls shows that the production of wool could have begun already in the Ubaid period, but it is risky to extrapolate his data over a larger area. According to Greenfield (2010: 39), the use of animals as beasts of burden was probably practiced during the Neolithic, but in the Chalcolithic period, the domesticated donkey started to be used on a wider scale, as indicated by its bones found at Tell Rubeidheh (LC3–5, located in the middle of the Diyala valley) (Payne 1988; see the chapter on LC3–5).

known already from Tell Sabi Abyad,[69] is attested at Tepe Gawra and might indicate that some level of administrative control over exchanged goods or stored surpluses existed.

[69] Stamp seals were already known in the Halaf period at Tell Sabi Abyad where clay sealings with stamp impressions have been found (Akkermans, Verhoeven 1995: 23).

Period 4 – Late Chalcolithic 1–2 (LC1–2)[70]

In LC1–2, another set of important changes in the development of northern Mesopotamia took place. The knowledge about the LC period in northern Mesopotamia is based mainly on findings at Grai Resh, Tepe Gawra, Khirbat al-Fakhar, Tell Brak, Tell al-Hawa, as well as Nineveh, Qalinj Agha, and sites located in the area of the Eski Mosul Dam Salvage Project and the Tigris Piedmont. The first phase of this period, that is, LC1, is poorly known, as most of the data was provided exclusively by strata XII and XIA/B at Tepe Gawra. It seems that during this time, links with southern Mesopotamia weakened. However, the achievements of the Ubaid period, like the economic differentiation and elite development, were continued in LC1 (Stein 2012: 132). The following LC2 period is better known. Buildings suggesting a presence of formalized political leaders are visible in the archaeological record, and burial practices indicate social stratification (Stein 2012: 135). Finally, an increase in the number and size of settlements, which is one of the indicators of the beginning of urbanization, is also visible.[71]

During LC2, large settlements appeared for the first time in northern Mesopotamia. Tell Brak covered at least 50 ha in LC2, and it reached 130 ha in the following LC3 period (Oates et al. 2007: 597; McMahon 2013: 70). Khirbat al-Fakhar, Tell Hamoukar's southern extension, consisted of a central mounded area measuring 31.3 ha and surrounded by a large flat outer area; the whole complex covered ca. 300 ha in LC1–2 (Ur 2010: 96). Tell al-Hawa was another large northern Uruk town with a citadel and lower town stretching to the east, south-east, and south (Ball, Tucker, Wilkinson 1989: 32). During LC2, the settlement at Tell al-Hawa had an area of 33 ha, and possibly even ca. 50 ha (Ball, Tucker, Wilkinson 1989: 32), which contradicts the assumption that the concept of urbanization came from southern Mesopotamia (Rothman 2001: 380).

Apart from the growth of the settlements, the LC2 period was also characterized by the increase in the number of sites and by economic and political development (Rothman 2002: 8; Skuldbøl, Colantoni 2016: 2–3). The increase in the number of sites is observable in the areas covered by recent survey projects undertaken in Iraqi Kurdistan, such as

[70] LC1–2 is sometimes called the "pre-contact" period (for example, Lupton 1996), as opposed to the "contact" period when the southern Uruk expansion took place. The term is quite misleading since relations between northern and southern Mesopotamia had already existed for a very long time before LC1–2.
[71] Other elements leading to the formation of cities include the increase in food supply, craft specialization, development of administration, trade or exchange, and formation of elites/landlords (see Trigger 1972).

LoNAP, EPAS, and UGZAR, in a survey in north-eastern Iraq around Tell al-Hawa (Wilkinson, Tucker 1995), as well as in similar studies undertaken in Syria around Tell Hamoukar (Ur 2010), Tell Leilan (Brustolon, Rova 2007), Tell Brak (Eidem, Warburton 1996),[72] and Tell Beydar (Ur, Wilkinson 2008).[73] Tell Brak played the role of a political and economic center at the turn of the 5th millennium BC. The site benefited from its location, which allowed it to control the main routes leading from the Tigris valley to Anatolia and from the middle part of the Khabur valley to the Mardin pass (Oates et al. 2007: 586). Khirbat al-Fakhar is interpreted as a proto-urban settlement engaged in obsidian trade (Al Quntar, Khalidi, Ur 2011: 153). Tepe Gawra, although much smaller in comparison to Tell Brak or Khirbat al-Fakhar, was "the center of a small, independent network or polity" during the first half of the 4th millennium BC (strata XI/XA–VIII) (Rothman 2002: 11). According to Rothman, "that polity included the eastern piedmont plain north of the Greater Zab river and the first foothills of the Zagros" (Rothman 2002: 11). Rothman reached this conclusion on the basis of numerous seals and sealings being found in "loci with specialized productive (cloth making, seal and bead cutting, wood working, stone tool making), storage, and religious activities" (Rothman 2002: 11). Thus, not only large sites were important but also some smaller settlements like Tepe Gawra. Helawa seems to be another small but locally important settlement. The site was settled from the mid 7th millennium BC (Hassuna) till the mid 4th millennium BC (LC3). The main occupation dates to the Northern Ubaid and LC1–3 periods. The growth of the site occurred most probably in LC1–2 when the area extended to 6.5 ha, and the maximum density of occupation was reached in LC2 (Peyronel, Vacca 2015: 102–103; Peyronel, Vacca, Zenoni 2016: 313). Some sites in northern Mesopotamia could also have had town walls, as in the case of Tell 'Afar and Grai Resh (Lloyd 1940: Fig. 2; Oates 1965: 68; Reade 1968: 235).

The urbanization process in the north was quite fast, and at the end, it was characterized by the following features: "(1) spatial agglomeration and population nucleation; (2) redefinitions of modes of production and consumption; and (3) the creation and redefinitions of societal institutions" (Skuldbøl, Colantoni 2016: 2). Thus, the previous assumption (Algaze 1993) that the urbanization was a southern Mesopotamian invention implemented in northern Mesopotamia through the influences from the south is nowadays contested by the discoveries in northern Iraq and Syria, at

[72] The publication gives the total number of Uruk sites, without dividing them into LC1–2 and LC3–4.
[73] However, later sites of the southern Uruk or LC4–5 periods were scarce (Ur, Wilkinson 2008: 307).

sites like Tell Brak or Khirbat al-Fakhar. What is also interesting, the urbanization in the north took various forms in different regions. For instance, in the Khabur Triangle in north-eastern Syria, a few large urban cities appeared, but in the hilly regions at the base of the Taurus mountains in south-eastern Turkey, urban settlements were small and evenly distributed. The Rania plain displays a different settlement pattern as well; here the number of sites increased in the LC period, but there was no urbanization, and the settlement seems to have had a rather more dispersed character (Skuldbøl, Colantoni 2016: 3, 21).

In light of more recent data, LC1–2, that is, mid 5th to the early 4th millennium BC, is considered to be the time of emerging urbanization. Urban centers developed in northern and southern Mesopotamia independently. This process continued also in the LC3 period (Peyronel, Vacca 2015: 90; Stein 2012). The communities in the so-called "pre-contact" period had already represented complex and hierarchically organized regional systems, even before contacts with southern Mesopotamia increased (Lupton 1996: 99).

Settlement structures

Excavations at sites dated to LC1–2[74] have yielded data about settlement structures of various functions, indicating a diverse and complex character of the settlements. These structures were clearly the result of the development and elaboration of traditions initiated in the Ubaid period, for example, the tripartite ground plan, temples and monumental architecture, and craft specialization.

The most important site which sheds light on the beginnings of LC1–2 is Tepe Gawra. Levels XII and XIA/B are dated to the LC1 period. In comparison with earlier stratum XIIA, stratum XII was characterized by dense occupation and a lack of religious buildings, which reappeared in the succeeding level (Tobler 1950: 25, Pl. VIII). The presence of a central storage house indicated that the settlement was possibly a local center (Rothman 2001: 387; Rothman 2002: 79–80). This assumption is also supported by the presence of a building with the so-called White Room, interpreted as "the chief's house" (the house of the leader) or a community center, perhaps with some religious

[74] Recent excavations at Muqable 1, undertaken by the EHAS, yielded very scarce architectural remains. In phase 3, dated to LC2, a pottery kiln was found. A mud-brick wall and a stone-paved street were unearthed in phase 4, dated to LC1 (Pfälzner et al. 2017: 51–52). According to the excavators, "the scanty remains of architecture and the narrow alley recorded in phase 4 are indications of a village-type of architecture" (Pfälzner et al. 2017: 52).

functions (Tobler 1950: 28; Rothman 2002: 74). The White Room was surrounded by other large tripartite buildings which might have been occupied by extended families (Rothman 2002: 77–78). Each of them yielded traces of craft production; in one obsidian core and blades were found, another yielded cloth-making tools, and yet another wood-working celts (Rothman 2002: 78). Stratum XII was abandoned suddenly, most probably due to a military attack, as suggested by burned debris and human remains found in the streets (Rothman 2002: 27–34). The building located in the northern part of the level was interpreted by Tobler as a temple, but Rothman suggests—on the basis of artifacts found there—that it was rather a building used for cloth-making (Rothman 2002: 84). Also, the greatest concentration of sealings occurred in this area. Many houses showed evidence of the usage of seals, which indicates that the administration was not wholly centralized and the goods were controlled also on a private level (Rothman 2002: 92). There was also a tower or a kind of defensive structure in the north-eastern part of the site, and the complex of rooms unearthed in its south-eastern part displayed some defensive features (thick walls) as well (Rothman 2002: 85–86). The area between these two structures was occupied by private houses. The most characteristic building was the so-called Round House which was located almost in the center of the mound. Some small buildings abutted its southern and western parts (Tobler 1950: 18–24, Pl. VI). The Round House was a circular structure, interpreted by Tobler and Rothman as a building used most probably for storage and defense[75] (Tobler 1950: 18; Rothman 2002: 74, 86; Rothman 2001: 387, 389). Margueron, however, suggests that it was just a house with a tripartite plan enclosed within a circle, with enhanced protection in comparison to the other buildings. And like in the case of some other houses, some of its rooms were reserved for storage. He also suggests that the house was used by a clan or its leader (Margueron 2009: 116). Perhaps a similar round-walled building existed at Qalinj Agha III, but its poor state of preservation (only a fragment of a circular wall survives) makes this proposal doubtful (Al-Soof 1969: 7). Remains of fortifications, slightly postdating the Round House, have been found at LC2-period Bab-w-Kur on the Rania plain in the shape of a 3-m-thick wall (Skuldbøl, Colantoni 2016: 8) and at Grai Resh, which was enclosed by a wall at the end of the 5th millennium BC (Lloyd 1940: 15; Kepinski 2011: 69). Structures of defensive

[75] This interpretation of the Round House's function was based on the thickness of the walls as well as on numerous celts, mace-heads, and hammerstones which had been found inside. According to Tobler, the presence of watchtowers at the opposite edges of the settlement supported its defensive character (Tobler 1950: 18, 20).

character in the settlements might suggest the presence of a threat or conflict. However, they could also have been used as a manifestation of wealth or marker of territory.

At the beginning of the LC2 period at Tepe Gawra (level XI), the Round House did not exist anymore; its place was now occupied by houses (Rothman 2002: 37). It also seems that crafts like weaving, wood-working, and bead carving were centralized in some structures of special purpose (Rothman 2001: 387). In level XI, a temple structure appeared again. To the west of the temple was a series of rooms equipped with ovens (Rothman 2002: 93). There was also a large impressive building with thick walls that Tobler interpreted as the residence of the leader of the community and a watchtower or a citadel (Tobler 1950: 15–16). Rothman, however, points out that cloth was produced in the building, and wood-working tools have also been found there. In his opinion, it was rather a secular public building. In the middle of the mound was an area of specialized production, including ceramic manufacture (Rothman 2002: 96), weaving shops and a workshop where small cutting tools and celts were used, and some small houses. The north-western part of level XI was occupied by houses as well (Rothman 2002: 97, 102). All of these structures (temple, craft workshops, and administrative buildings) yielded large numbers of seals and sealings (Rothman 2001: 389). Level XA showed some changes; the site seems not to have been engaged in manufacturing activities to the extent evidenced in the previous level XI. The temple from level XI and the houses to the west of it were gone before the end of level XA. New rooms raised in the southern part of level XA were used for food preparation and serving. The area in the eastern part of level XA was used for some craft production requiring cutting and hammering tools. In the south-western part, houses with some craft functions appeared. In the workshop area of level XI, new buildings emerged, which seem to have been used for craft specialization (Rothman 2002: 107–108). The sealings of level XA were associated with the temple and productive areas, and they did not occur in domestic contexts (Rothman 2002: 112). In level X, a temple was raised in the southern part of the settlement, and a large public building was located in the south-western part of the level (Rothman 2002: 112–113). The building in front of the temple is interpreted as the house of the temple's cook (Rothman 2002: 119). In the eastern part of the excavated area of level X, there was a small single-roomed shrine which was erected over a tomb adjacent to a house with some craft production (Rothman 2002: 114, 116). The buildings located in the northern and eastern parts of level X were of domestic character (Rothman 2002: 115–116, 118–120). Unlike in the earlier levels, there were no specialized craft shops; craft production was

instead scattered in domestic buildings. A large number of seals were found in the area to the south of the temple (Rothman 2009: 121). In level IX, the center of the settlement was occupied by a temple with decorated external walls (Rothman 2002: 114, 121). Next to the temple, on its western side, stood a building which was probably used as a house of the temple attendants or a large kitchen for the temple ritual. The building located to the south of the temple could have served some public functions. To the east of this building, a large single-roomed structure was found; it was used probably as a storeroom for foodstuff. A building with one or two craft workshops of luxury goods and a domestic area were found to the north of the temple (Rothman 2002: 123–124). In the south-western part of level IX, a grand residence or secular public building was located, and the north-western part of the site constituted the living area (Rothman 2002: 126). The seals from level IX were found in the temple, the presumed priests' house, and the large secular building (Rothman 2002: 127). It seems that in levels X and XI, the role of a central administrative institution was played by the temple since plenty of seals and sealings were associated with it (Tobler 1950: 7–10; Rothman 2001: 389).

Another important center of the LC2 period was Tell Brak, located in the Upper Khabur basin. A few buildings related to craft specialization have been found at the site. There was a secular monumental building (dated to the late 5th millennium BC, TW Level 20), which had a large entrance with two small rooms outside (interpreted as guardrooms or towers) and a threshold made of a large piece of basalt[76] (1.85 x 1.52 m; for this reason, the building is called the "Basalt Threshold Building"). Further small rooms were added along the northern wall; perhaps they were used as small shops or storerooms. According to the excavators, the building could have served some economic functions as it was located near the presumed north gate of the city and the neighboring building showed evidence of some craft production. In the building located just to the west, remains of various crafts were found: there were plenty of basalt pounders and grinding stones, stone and bone tools, spindle whorls, obsidian blades, and many others. Also, clay seal impressions were found. Another building (from the LC2–LC3 transitional period, TW Level 19) was more industrial in character; a lot of raw materials were found there: piles of raw flint and obsidian and colored stones such as jasper, marble, serpentine, and diorites (Oates et al. 2007: 588–592; McMahon et al. 2007: 151; Emberling, McDonald 2003: 10). The erection of such large buildings and their maintenance required the

[76] Basalt does not occur in the vicinity of Tell Brak but can be found south-east of Hassake, around the Kaukab volcano, some 30 km to the south-west (Kepinski 2011: 57).

investment of time, materials, and labor. Such large building projects need good organization and planning. The architectural plan of a building must be created, the place for the construction must be chosen and, if necessary, the old buildings must be removed, materials for the construction must be obtained and, as some of them may be unavailable locally, it is necessary to bring them from other, even distant places, and finally, the construction process must be well organized. Thus, the existence of large secular or religious structures indicates that some kind of labor management presumably existed.

Tepe Gawra and Tell Brak were not the only places with craft specialization. It is evidenced also at Bab-w-Kur (dated to the LC2–LC5 period) which was a small production center in the Rania plain during LC2, "involved in the processing of pigment, animal bone and shell beads." The site was densely occupied and well-planned, consisting of tripartite houses and workshops (Boaz, Skuldbøl, Colantoni 2016: 8). A bead workshop was found at Grai Resh where one of the buildings contained a room with various beads made of calcite, bone, obsidian, and shell, some still unfinished. There were also fragments of flint and obsidian debitage and a seal with a geometric design (Kepinski 2011: 56–57). Tell Musharifa and Qalinj Agha, in turn, yielded houses with kilns, which might indicate that the buildings belonged to pottery-makers (Fujii 1987: 50–52; Al-Soof 1969: 4). One of the large tripartite buildings found at Telul eth-Thalathat had a buttress (dated to LC1) and a brick pavement, suggesting that it was something more than a simple private house (Dunham 1983: 35–36); however, it is not clear whether it was designed for administrative, craft, or religious purposes.

Besides the secular structures intended for craft and industrial activities, some temples were also discovered. The ones at Tepe Gawra have already been mentioned, but Telul eth-Thalathat and Qalinj Agha yielded this kind of remains as well. At Telul eth-Thalathat, a building with an altar-like mud-brick pier was interpreted by the excavators as a temple. Unfortunately, it was not assigned to any of the building levels and the only information given was that it was of "Uruk date" (Dunham 1983: 35–36). Two temples were found at Qalinj Agha, the "Western Temple" and the "Eastern Temple" (in levels corresponding to the LC1–2 period), both built on a tripartite ground plan (Al-Soof 1966: 78–80; Al-Soof 1969: 6; Al-Soof 1967; Lupton 1996: 32–33). Temples performed not only religious and ritual functions but could also have been involved in craft production and trade, thus playing an important role in the development of the community.

The domestic structures had various ground plans. Houses built on a tripartite plan were present at Tepe Gawra and Grai Resh (Lloyd 1940: 15; Kepinski 2011: 57). Houses

of a less regular shape, consisting of rectangular rooms, were found at Grai Resh (Kepinski 2011), Tell Musharifa[77] (Fujii 1987), and Khirbat al-Fakhar (Al Quntar, Khalidi, Ur 2011). The objects found within the houses at Grai Resh, Qalinj Agha, and Tell Musharifa included standard domestic implements, such as flint and obsidian tools, fired-clay spindle whorls, loom weights, basalt grinding stones, querns, mortars, mullers, pestles, celts, axes, adzes, rubbers, and polishers, as well as ovens located inside and outside the buildings (Al-Soof 1969: 8; Fujii 1987: 50–52; Kepinski 2011: 57). At Grai Resh, a large private building with a tripartite plan contained a large storage jar, with the remains of wheat and barley, set in a depression in the floor; other jars in the vicinity yielded animal bones and must have been used for meat storage (Lloyd 1940: 15). A multi-roomed building with an open-air courtyard excavated at Khirbat al-Fakhar seems to have been engaged in textile production, as indicated by the presence of spindle whorls (in Rooms 11 and 12), and in obsidian knapping, which took place in the courtyard (there was also an oven/kiln) (Al Quntar, Khalidi, Ur 2011: 155–156).

Procurement of raw materials and contacts with other regions

The variety of materials used for the production of different objects shows that the contacts with distant regions established in previous periods were not only maintained but also broadened.

The contacts with Anatolia are evidenced by objects made of obsidian that have been found at many archaeological sites, including Tell Nader, Tell Surezha, Tepe Gawra, Tell Brak, Khirbat al-Fakhar, Tell al-Hawa, Tell Raffan, Grai Resh,[78] and Helawa (Carter, Ford, Grant 2013: 34–36; Stein, Alizadeh 2014: 147; Tobler 1950: 192; Conolly 2003; Al Quntar, Khalidi, Ur 2011: 162–166; Ball, Tucker, Wilkinson 1989: 39; Bieliński 1987a: 19; Lloyd 1940: 6; Peyronel, Vacca, Zenoni 2016: 317). At Tell Nader, obsidian used to make items (dated to the 5th/4th millennium BC) was transported from the Bingöl and Nemrut Dağ sources in eastern Anatolia (Carter, Ford, Grant 2013: 34–36). Similarly, at Surezha, obsidian was obtained from the Nemrut Dağ and Meydan Dağ sources, both located close to Lake Van. Some samples originated from the region of Sarikamish to the north of Lake Van, and one came from an unidentified source "3-D" (Stein, Alizadeh

[77] Tell Shelgiyya was another site in the Saddam Dam area which yielded some Early Uruk remains (a paved surface and some walls) (Ball, Pagan 2003: 154).
[78] The presence of obsidian blades and of a large chert core indicates that production of tools took place at the site (Lloyd 1940: 16).

2014: 147). Large amounts of obsidian were found at Khirbat al-Fakhar, which indicates that the settlement was engaged in trade (Al Quntar, Khalidi, Ur 2011). What is interesting, the use of obsidian blades in southern Mesopotamia was limited mainly to the LC2–4 period (Pollock 2001: 197).

The links with Anatolia are also confirmed by the presence of copper. At Tepe Gawra, copper objects appeared for the first time in level XVII but only starting with level XII, they occurred in higher quantity and throughout all periods (they were most numerous in level XI); nevertheless, they were not common. Among the copper objects were axe-heads (levels XII and XI), buttons (XII) and a pin (XI) (Tobler 1950: 212–213). Grai Resh also yielded some copper objects; an implement similar to a chert knife or lance-head was found there (Lloyd 1940: 15).

The biggest variety of raw materials was used to produce beads and seals. At Tepe Gawra, starting with level XIII, the most common materials in the production of beads were (besides obsidian and carnelian) limestone, turquoise, amethyst, lapis lazuli, agate, quartz, jadeite, beryl, diorite, hematite, steatite, and serpentine (Tobler 1950: 192). A few gold beads were found in levels XII, X, and IX (Tobler 1950: 192–193). Goods made of gold and lapis lazuli were also placed in burials at Qalinj Agha (Matthews 2003a: 34) and at Grai Resh (Kepinski 2011: 54). In level XII at Tepe Gawra, seals were numerous; they were made of black, dark brown, and grey steatite, white limestone, obsidian, serpentine, red and white marble (Tobler 1950: 221–252). Gold and lapis lazuli appeared for the first time in modern northern Iraq in the LC1–2 period (Tepe Gawra level XII, Grai Resh LC2). The presence of lapis lazuli shows that already in this early period exchange networks connecting northern Mesopotamia with regions as remote as present-day Afghanistan were established (Rothman 2002: 81; Stein 2012: 136).

Food sources – land use

Analyzes of faunal and floral remains from the LC1–2 settlements are extremely rare. Some very scant information comes from Qalinj Agha, where the presence of bones belonging to domestic goat, gazelle, and deer was reported (Al-Soof 1969: 8). Among the animal remains at Grai Resh were bones and horns of sheep or goats. There were also horns of water buffalo (Lloyd 1940: 16). At Tell Brak's Early Uruk settlement, caprine bones were the most numerous, indicating that sheep and goats played an important role in the animal economy. The high ratio of caprines in this period might be related to the

development of the textile industry; moreover, the age of death suggests that they were kept for secondary products. Remains of cattle and gazelle also occurred but were less frequent (Dobney, Jaques, van Neer 2003: 418). Domestic animals constituted ca. 80% of the remains (Dobney, Jaques, van Neer 2003: 428–429).

In the case of plant remains, analyzes show that emmer wheat was the most common grain at Grai Resh; barley was present as well but in small quantity. Emmer wheat was quite popular on other Late Chalcolithic sites as well, but in the Bronze Age, barley became more popular. Among other plant remains identified at Grai Resh were some leguminous plants: lentil and grass pea and plants from the *Pisum/Vicia* family. Perhaps also large legumes such as peas, chickpeas, or horse beans (the fragments found could not be identified with high precision). The site yielded remains of fruits as well: seeds of grapes and wild pistachio (Kepinski 2011: 66). Flax was used for making textiles; however, its seeds have been found with other edible plants, and it is possible that it was also eaten. Flax occurs often on Chalcolithic sites but tends to disappear in the Bronze Age (Kepinski 2011: 67). At the Early Uruk Tell Brak, the most common was glume wheat (representing almost 80% of the samples) and also hulled barley (ca. 22%); however, as in the case of other sites, the proportions changed with time. In the Middle Uruk and Ninevite 5 periods, the quantity of barley increased to ca. 50% of the samples, while that of wheat decreased to ca. 50%. In the later 3rd millennium BC, barley constituted ca. 90% (Colledge 2003: 394). Another quite popular source of food was lentil (Colledge 2003: 401).

Burial customs

There is not much data about the burial customs of the Early Uruk period. Tepe Gawra is the only site where a large number of graves dated to this period were discovered. Graves found in the other settlements usually belonged to infants or children. It is possible that the dead were buried in cemeteries located outside the settlements, which makes them difficult to find for archaeologists. This is the case of the cemetery at Tell Brak which might have been located at a distance from this large settlement (Oates et al. 2007: 598). It is also important to note that usually, archaeological sites are not so extensively excavated as was the case at Tepe Gawra; thus, graves that could be located in other parts of the site might not be found.

The largest known cemetery was found at Tepe Gawra in stratum XII. It consisted of 120 graves,[79] most of which were dug under the floors and walls of buildings (Tobler 1950: 103). Stratum XIA yielded 47 graves. In the succeeding strata, dated to the LC2 period, the number of graves decreased, except for stratum XI where 73 graves were found. The high number of graves in stratum XI might be related to the presence of a temple. Thirty graves belonging to infants or children were associated with this building; 22 of them were situated outside its walls, while the rest was dug under the temple. Nineteen graves were located around and under the thick-walled building on the northern edge of the mound. The rest were scattered within the settlement or situated on its periphery. Most of these graves belonged to infants. A similar situation occurred also in stratum XIA where the graves were located around the ruined temple, while in stratum XA the graves were scattered evenly throughout the settlement, maybe because there was no temple or any important building which might have been an attractive location for a burial (Tobler 1950: 101–102). The placement of burials in the vicinity of certain buildings highlights the special function of these structures.

Some of the grave types known from Tepe Gawra in the Ubaid period continued to be used also in the Late Chalcolithic, but generally, the variability of types was higher than before. There were simple inhumations without any covering (the most numerous in this group) as well as burials which were covered by matting, sun-dried mud-bricks, stones, or plaster. These types of cover did not occur before, except the plaster one. The other common type was an urn burial, usually in an open or lidded vessel. There were also burials in the form of a "capsule," under an urn or sherds, covered with a basket, or with a brick enclosure. Other types of graves included a side-walled grave[80] and a *pisé* grave,[81] which had not been used in the Ubaid period. The highest diversity of grave types appeared in level XII, as well as XIA and XI (Tobler 1950: 106, Table A). While in the Ubaid period the numbers of graves of children and adults were equal, now the infants' and children's burials were the most numerous in all the levels (Tobler 1950: 111, Table

[79] Tobler differentiates between graves and tombs. Graves were simpler in construction, while tombs were more elaborate (see below). Tobler discusses them separately.

[80] Side-walled graves usually had a single wall made of mud-bricks extending along one side of the skeleton. The wall was usually constructed of a single course of bricks, but there is also an example of a wall formed of two courses of bricks, and in another case, the "wall" consisted of only a single brick. Bricks could be laid in the usual fashion or on their stretchers or headers. Sometimes the wall was built of stones or of stones and bricks. One of the graves had two walls, one on each side of the skeleton, and was covered with a reed mat and three bricks (Tobler 1950: 108).

[81] *Pisé* graves consisted of a low mud wall completely enclosing the burial. Their construction resembles the construction of tombs (see below); perhaps *pisé* graves and tombs were somehow related (Tobler 1950: 109).

B). The graves were poorly equipped; some had no burial goods of any kind except for beads (Tobler 1950: 115).

The simplicity and modesty of the majority of the graves are in contrast with the more elaborate and sometimes very rich tombs found at the same site. In total, 80 tombs were discovered in levels XIA–VIIIC (late LC1–LC3) (Tobler 1950: 18). Typically, they consisted of an enclosure of sun-dried mud-bricks (the most common type) or stone or both. They were often roofed with mud-bricks, matting, stone slabs, or wood. Most numerous were the graves in level XI (24 tombs) and VIIIC (22 tombs)[82] (Tobler 1950: 51, 68, Table D). In most of the tombs were buried infants and children, but skeletons belonging to young and mature adults have been identified as well. In the case of eight burials, a pigment was placed on the body, usually of an adult (Tobler 1950: 78). Some of the tombs were richly furnished with, among others, seals, beads (the most common among grave furnishings; the number of beads made of various stones: turquoise, jadeite, carnelian, hematite, marble, limestone, quartz, obsidian, steatite, lapis lazuli, diorite and other materials like shell, white paste, and gold ranged from a few dozens to tens of thousands in a single tomb) and pendants, stone vessels (which appeared in level X and replaced pottery vessels starting with level IX), mace-heads, obsidian blades and cores, combs and hairpins made of ivory and bone, rosettes and studs made of gold, a wolf's head made of electrum (Tobler 1950: 81–92).

The graves of children and infants were found also at Grai Resh and Qalinj Agha. At Qalinj Agha, most of the children were buried in urn vessels (in the case of the burials from level III, Al-Soof did not mention the type of grave). Only one grave belonged to an adult (Al-Soof 1969: 4–7). At Grai Resh, a body of a child was enclosed by a "rectangular vault covered with mud bricks" (Kepinski 2011: 54).

The majority of the known graves from the LC1–2 period belonged to children, but some adult ones have been found as well. The graves differed in type and grave goods—there were both simple inhumations and burials with more elaborate construction, some of the graves were poorly equipped, while others yielded precious objects. Some of the richly-equipped tomb graves at Tepe Gawra belonged to children; at Grai Resh, a child's grave from the late 5th millennium BC contained 16 beads made of carnelian, lapis lazuli, and gold (Kepinski 2011: 54); at Qalinj Agha, two of the many children's and infants' burials contained more precious objects – in one of them, a few gold beads and an

[82] There were 3 tombs in stratum VIIIB, 14 in IX, 10 in X, 4 in XA, and 3 in XIA (Tobler 1950: Table D).

obsidian item (a kohl applicator) decorated with a thin gold band were found, and the other yielded a gold rosette (Al-Soof 1969: 5). The mortuary practices of LC1–2 show social differentiation and indicate that social status could have been inherited.

Settlements' distribution and dynamics[83]

The settlement of period 4 (LC1–2) in the area surrounding Tell Hamoukar (Fig. 11) was characterized by an increased number of sites. During the Ubaid period, there were only two sites present, and in LC1–2, the number grew to 13, thus equaling the number of sites during the Halaf period. However, in the LC1–2 period, the settlement was not dispersed anymore but had a more linear pattern; the sites formed two lines running from the north-west to the south-east, one starting in the center of the survey area and going south-east, and the other located in the north-eastern part of the survey area (Ur 2010: 98–99). The largest site in the survey area was a proto-urban settlement Khirbat al-Fakhar. It consisted of a central mound and a surrounding area composed of "clusters of greyish anthropogenic soils separated by open and possibly unsettled areas" (Ur 2010: 147). There are two models of interpreting the structure of the site. The first one assumes that a permanent settlement existed in the central area, while its surroundings were seasonally occupied by nomads. According to the second model, both the central area and its surroundings were permanently occupied (Ur 2010: 147–148; Al Quntar, Khalidi, Ur 2011: 169–170). Later during LC2, Khirbat al-Fakhar was abandoned, and the settlement shifted north to Tell Hamoukar (the mounded area of Khirbat al-Fakhar is located ca. 1.6 km from the Tell Hamoukar's mound). As for the continuity between periods, one of the two settlements from the Ubaid period was occupied also in LC1–2. Six settlements of the LC1–2 date were occupied also in the following LC3–5 period. The rates of establishment and abandonment (Table 10) differ quite significantly, and the higher rate of establishment suggests a developing settlement, as shown also by the total number of sites established (sum of *types c* and *d*) and abandoned (sum of *types a* and *d*) during the period. The average number of contemporaneously occupied sites was ca. 3.5 to 5.43 (depending on whether the sites of *type d* were considered or not) (Table 10). There was also a tendency in the region to reoccupy previously settled places (Ur 2010: 99).

[83] Wilkinson and Tucker (1995), as well as Ibrahim (1986), did not divide the LC sites into Early, Middle, and Late Uruk; instead, they labeled all of these sites "Uruk period." Thus, the regions of Tell al-Hawa and Tell'Afar will be analyzed in the chapter covering the LC3–5 period.

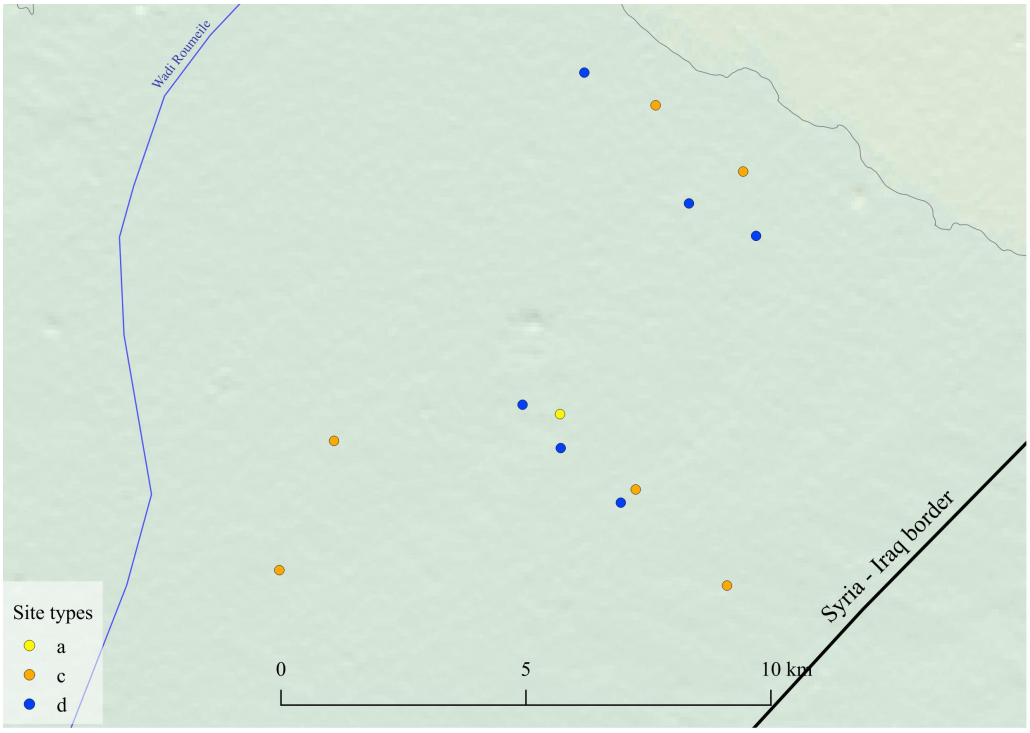

Fig. 11. LC1–2-period occupation in the Tell Hamoukar region (map: J. Mardas)

The Zammar region yielded only a few sites with earlier Uruk material, which is surprising, considering the Ubaid settlement was denser here, and in the neighboring region of Tell al-Hawa, the settlement increased during the Uruk period (Ball 2003: 11). This is especially surprising compared to the results of the LoNAP project. The number of sites in the LoNAP region increased significantly during the LC1–2 period, reaching 125 sites, while in the Ubaid period, only 58 sites were recorded (Iamoni 2017).

Table 10. LC1–2-period occupation in the Tell Hamoukar region

a	*b*	*c*	*d*	Occ_{abc}	Occ_{d+}	Occ_{d-}	Occ_{d}	*Occ*	*Min. no of sites at period's*		*p**	E_{occ}	A_{Occ}	*Total no of sites*
									beginning	*end*				
1	0	6	6	3.5	3	0.86	1.93	5.43	1	6	700	0.017	0.01	13

In the Tell Leilan area, 21 sites of LC1–2 date were recorded during the survey undertaken in 1995. The sites were homogeneously distributed within the survey area. In the following LC3–5 period, the number of settlements decreased (Brustolon, Rova 2007: 29, 37).

The EPAS has recorded nine LC1–2 sites in the southern part of its concession. There was a slight shift in the settlement; some sites were located nearer to present-day

Erbil, in contrast to the previous period when all sites lay along the Kurdara and Siwasor streams (Ur 2017a).

In the EHAS region, 18 sites dated to LC1–2 have been recorded. Most of them were located on the slightly undulating Eastern Tigris plain between the Eski Mosul Dam Lake and the Jebel al-Abyad (Sax-e Bixer, the first Zagros range) (Sconzo 2017a).

The UGZAR area

Twenty-five LC1–2 sites have been recorded in the UGZAR area (Fig. 12). There were three clusters of sites, one located in the Karabak valley, the second in the area of the city of Rovia, and the third in the northern part of the Navkur plain. Four sites were dispersed throughout the Harir plain, and four more lay along the Greater Zab, two on the eastern bank and two on the western one. One site was located on the bank of the Bastora, and another on an old route leading to the Harir plain and further north towards Rawanduz (and Azerbaijan). The settlements were established along rivers and streams or in their vicinity. Most of them lay in flat areas with good agricultural conditions. The settlements were usually small—some of them could have been of moderate size, but the exact area is difficult to assess, especially on multi-period sites; moreover, the pottery was usually collected from the so-called "collection areas" which did not cover the whole site. Generally, based on the total area of the sites with LC1–2 potsherds, it can be said that in the case of 20 of 25 the settled area did not exceed 4.5 ha, and seven of these sites must have been even smaller than 1 ha.

There is a clear difference between the settlement pattern observed on the Navkur plain/in the Karabak valley and on the Harir plain. The former area was not abandoned completely at the end of the period. The Harir plain, on the other hand, seems to have remained abandoned throughout the LC3–5 period and then resettled in the subsequent Ninevite 5 period. In the Karabak valley, three out of four previously settled sites had pottery from both Ubaid and LC1–2, as well as from the following LC3–5; they could have been either settled continuously since the Ubaid period or resettled in the LC1–2 period. Moreover, two new sites were founded, which were occupied in the later period as well. A few other sites were also settled and abandoned within the period. On the Harir plain, the settlement seems to have been less permanent; the previously settled sites and the new ones were abandoned during the period. Two of the LC1–2 sites on the Harir

plain, US172 and US219, were founded in this period; two others, US219 and US198, were established during the Ubaid period and both were occupied during LC1–2.

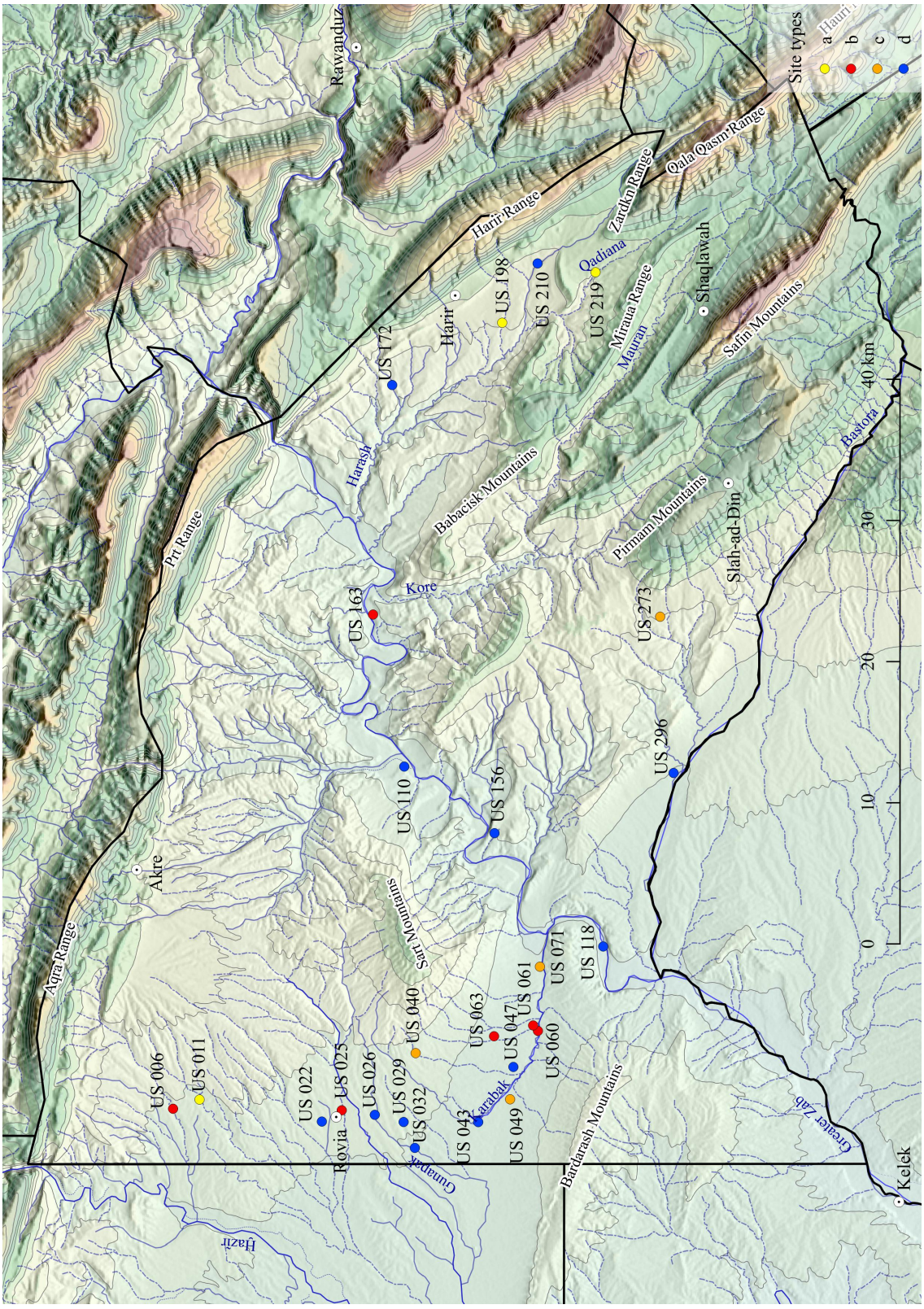

Fig. 12. LC1–2-period occupation in the UGZAR area (map: J. Mardas)

At site US210, a fragment of obsidian (a flake?) was found which might be dated either to the LC1–2 period or to the middle-late 3rd millennium BC (it seems unlikely that an obsidian tool would have been used from Parthian to Late Sassanian/Early Islamic times which are evidenced on the site, too). However, the former supposition seems to be more probable since there was only one potsherd from the second half of the 3rd millennium BC found on the site and many more from LC1–2. In the Bronze Age, the obsidian was still in use; however, tools made of obsidian were superseded by metal ones (Renfrew, Dixon, Cann 1966: 49).

In the Karabak valley, sites were located mainly along the Karabak stream. Two of these sites, US047 and US043, were abandoned sometime during the period. Northwards, at the foot of the Sart mountains, site US040 which had been occupied during the Halaf period was now resettled. Sites US040 and US071 located in the eastern part of the Karabak valley, just 2 km west of the Greater Zab, US025 located in the city of Rovia in the eastern part of the Navkur plain, and US060, a large site laying almost in the middle of the Karabak valley along its main stream, have long multi-period sequences of occupation.

The cluster of sites around Rovia seems to have been less stable. Only one of five documentedsites, US025, also yielded potsherds from the subsequent period, which might suggest that the site was continuously occupied; the others were abandoned within LC1–2. The vicinity of US025 was not resettled in LC3–5.

In the case of a pair of sites in the north-eastern part of the Navkur plain, only one of them seems to have had a more stable location. On US006, besides LC1–2 material, pottery from both the preceding Ubaid and the following LC3–5 period was collected. Yet another site, US011 (which yielded only one LC1–2 sherd), was abandoned sometime within LC1–2 and resettled again in the Late Sassanian/Early Islamic times.

Six LC1–2 sites have been found in quite isolated positions. The first of them, US163, located on a terrace on the eastern bank of the Greater Zab (not far from the confluence of the Kore stream and the Greater Zab), had evidence of occupation since the Halaf period. US273 was located in a flat area surrounded by hilly and mountainous regions, with the Pirmam mountains to the east and the Bauakhalan plateau to the west; the site lay along a track leading to the Harir plain, known from later times. US273 was resettled in the LC1–2 period and occupied as well in the following LC3–5. The other four sites were newly established. US296, located on the right bank of the Bastora river,

yielded scarce traces of human activity and was abandoned within the LC1–2 period. Site US110 had a slightly similar location to US163. It lay on a terrace on the western bank of the Greater Zab and was not easily accessible from the neighboring regions. US110 showed traces of occupation also from the following period. Perhaps the location of US163 and US110 had something to do with fishing or river transport, but it is impossible to confirm this without further investigation. Site US156 lay on a high terrace of the Greater Zab, along a small tributary of the river. The site was tiny (the total area was 0.35 ha) and has yielded only one potsherd of LC1–2 date; other sherds were from the Ninevite 5 period or later. Site US118 was also very small (ca. 0.7 ha), located at the edge of the river terrace.

Table 11. LC1–2-period occupation in the UGZAR area

a	*b*	*c*	*d*	Occ_{abc}	Occ_{d+}	Occ_{d-}	Occ_{d}	*Occ*	*Min. no of sites at period's*		*p**	E_{occ}	A_{Occ}	*Total no of sites*
									beginning	*end*				
3	6	4	12	9.5	3	2.4	2.7	12.2	9	10	700	0.023	0.021	25

It seems that in the UGZAR area, there was a tendency to occupy previously settled places; 52% of all sites settled in this period were located in places which had been occupied for some time in the past. The rest, representing mostly sites of *type d*, were established in new places.

In comparison to the previous period, the number of settlements increased, and, as could be expected in such a situation, many of them were completely new sites. Ten of these sites also yielded material from the LC3–5 period. In total, there were 25 settlements, but based on Kintigh's formula, it can be said that the average number of contemporaneously occupied sites varied between ca. 9 and 12 (Table 11). The ratios of establishment and abandonment have similar values, which could suggest a quite balanced settlement pattern. The numbers of settlements at the beginning and end of the period seem to be similar. There are a few sites which had perhaps been continuously settled since the previous period till the one following LC1–2, and many sites of *type d* were established and abandoned sometime during this period.

Conclusions

The LC1–2 period was a time of initial urbanization, but the dynamics of that process varied depending on the area. In north-eastern Syria, large local centers like Tell Brak or a proto-urban center Khirbat al-Fakhar appeared, but in eastern Iraq, the Rania plain showed a different, more dispersed settlement pattern. In the UGZAR area, settlements seem to be dispersed on the Harir plain, where they also appear to have been less stable, while on the Navkur plain, they seem to form loose concentrations. Nevertheless, the whole pattern seems quite balanced. A few sites were potentially continuously settled since Ubaid till LC3–5. The settlement in the UGZAR area seems to be of a rural character; the sites are small, and there are no urban or even proto-urban settlements. In the Tell Hamoukar area, the settlement pattern looks different. Here the Ubaid settlement was very sparse, but during the LC1–2 period, a lot more of new sites appeared, and almost half of them have also yielded material from the following period. The settlements were grouped in clusters both in the Tell Hamoukar and UGZAR regions, but it is more clearly visible in the former region. It is also characteristic that the number of settlements in the Tell Hamoukar, UGZAR, and LoNAP regions grew; the highest growth in comparison to the previous period occurred in the Tell Hamoukar region, while the biggest number of LC1–2 settlements was recorded in the LoNAP area.

Large centers like Khirbat al-Fakhar and Tell Brak appeared to get involved in craft production for the first time during the LC1–2 period; some of the products were perhaps used for exchange. However, also smaller settlements, like Tepe Gawra which is only ca. 2 ha in area, could be involved in craft specialization and participate in the exchange, even with distant places. Some of the crafts could have been organized on a private level; others were probably controlled by temples. It is difficult to say whether Tepe Gawra is a special or more common type of settlement since no other settlements have been so extensively excavated; nevertheless, it shows that small settlements were not necessarily just simple villages.

During LC1–2, social differentiation seems to be evidenced by mortuary practices. Various types of graves were used; some were simple pit graves, others could have a more elaborate construction like tombs at Tepe Gawra. The grave goods varied from simple and poor to rich. Since the differences occur also in the graves of children, it seems that social status was inherited.

The LC1–2 period might have witnessed some tensions between the people, which could be indicated by the appearance of some structures with defensive features, like at

Grai Resh, Bab-w-Kur, Tepe Gawra, and perhaps also Qalinj Agha. The evidence of conflicts is visible in later Late Chalcolithic phases at Tell Hamoukar and Tell Brak (see the following chapter).

Period 5 – Late Chalcolithic 3–5 (LC3–5)

The earliest phase of period 5, that is, LC3, is characterized by the continuation of LC2 traditions, such as the development of urbanization, craft specialization, and power relations. One of the inherent elements of urbanization is the accumulation of wealth and power, as well as social stress, which may, in consequence, cause conflicts (see McMahon 2014). The evidence of such conflicts is visible in the archaeological material; for instance, in the mass graves at Tell Majnuna, a site constituting a part of Tell Brak's urban center of this period. Tell Hamoukar had been enclosed by a 3-m-wide city wall already before the southern Uruk expansion (ca. 3700 BC) (Reichel 2006: 67–69). Some of the settlements mentioned in the previous chapter have also yielded remains of city walls or fortified structures. The seals and seal impressions from Tell Brak indicate a progressing formation of leaders and power. Some of them depict a man fighting a lion, a symbol which was later connected with kingship (Stein 2012: 141).

During LC3, some sites grew significantly. Tell Brak had achieved its maximum area of 130 ha already during the northern Middle Uruk period (ca. 3800–3400 BC) (Oates et al. 2007: 597; Ur, Karsgaard, Oates 2011: 7). Other sites reached large sizes as well, like Nineveh where most of the nearly 45-ha-big tell could have been occupied (Algaze 1986: 129; Stronach 1994: 89), Tell al-Hawa with 37 ha occupied (the area of the site had decreased since the earlier Uruk when the settlement had been occupying ca. 50 ha, Ball 1990: 12–14), Hamoukar extending over 15 ha (Ur 2010), and Grai Resh at 30 ha (Kepinski 2011: 69–70). Tell al-Hawa and Tell Brak were surrounded by smaller settlements, but the area within the radius of 3 km (Tell Brak) and 3.5–5 km (Tell al-Hawa) was empty. This might have been caused by the intensive cultivation of agricultural fields surrounding these two sites, as Ur, Karsgaard, and Oates suggest (2011: 8). Large settlements needed large amounts of food, and if the surrounding fields did not yield enough produce, it had to be obtained from the neighboring villages (Wright 2001: 141).

The exchange and management of goods and products and the storage of surpluses required advanced administrative systems. Seals and sealings were already quite common at many sites, but at Tell Brak, a new form of recording devices appeared. In an LC3 architectural complex, two dockets with numbers and pictographs representing animals

and a tablet with numbers on it have been found (Oates, Oates 1993: 173–174); a more advanced administration[84] appeared also at Tepe Gawra (Rothman 2002: 140).

The developments observed during the LC3 period contest the former views on the development of cities. Previously, it was assumed that urbanization was born in southern Mesopotamia and was later introduced in the north through the contacts with the south. Although contacts with southern Mesopotamia most probably did exist during LC3, as demonstrated by the excavations at Girdi Qala (in the vicinity of Chamchamal) where southern Uruk material produced locally was discovered already in the late LC2 levels (Baldi 2015: 65–66), they were far from intensive. At Grai Resh, contacts with southern Mesopotamia also existed already in the early 4th millennium BC, as evidenced by the presence of beveled rim bowls (Kepinski 2011: 69). However, very strong relations are attested only for the LC4 period. At that time, northern Mesopotamia was already developed politically and economically.

The intensity of contacts with southern Mesopotamia varied throughout the region. Lupton differentiates three zones (Fig. 13) in northern Mesopotamia during the "contact period": "a southern dominated zone, a middle zone with small southern sites and/or presence at the local regional centers; and a more northerly zone with southern materials but no southern presence" (Lupton 1996: 99, Fig. 3.19). The first zone covers the regions of Birecik-Carchemish and Tabqa Dam in the west, the Middle Euphrates, the Middle and Lower Balikh, and the Middle and Lower Khabur (Lupton 1996: 66). Trade routes led also along the Tigris; however, there were no large southern sites such as Jebel Aruda or Habuba Kabira South[85] (Rothman 2001: 350). The second zone extends over the Upper Balikh basin, the Khabur Triangle, the Iraqi North Jazira, and the area to the east of the Tigris. In this area, small indigenous settlements predominated, but there were also small Uruk sites lying on communication routes, and some Southerners lived in indigenous regional centers like Tell Brak or Nineveh (Lupton 1996: 66, 100). The third zone is a territory stretching from Arslantepe in the east through present-day south-eastern Turkey. Here, the only indication of the presence of southern Mesopotamians was southern material (Lupton 1996: 66, Fig. 3.19). According to Lupton, in the two zones with limited

[84] The system worked in the following way: "one piece of sealing was probably sent to the temple with the contents, while the other remained in the storeroom where the seal was broken. This indicates an administrative control over goods flowing out of the central warehouse to other institutions. It represents a new technique, in effect using pieces of the sealing like the sub of a receipt" (Rothman 2002: 140).

[85] A southern Uruk outpost existed also at Godin Tepe located in the Kangavar valley of the Zagros mountains in western Iran, on the Khorasan road leading from southern Mesopotamia to the Iranian plateau (Weiss, Young 1975; Rothman, Badler 2011).

influence from southern Mesopotamia (second and third zone), the pre-contact settlements remained mostly unchanged (Lupton 1996: 100).

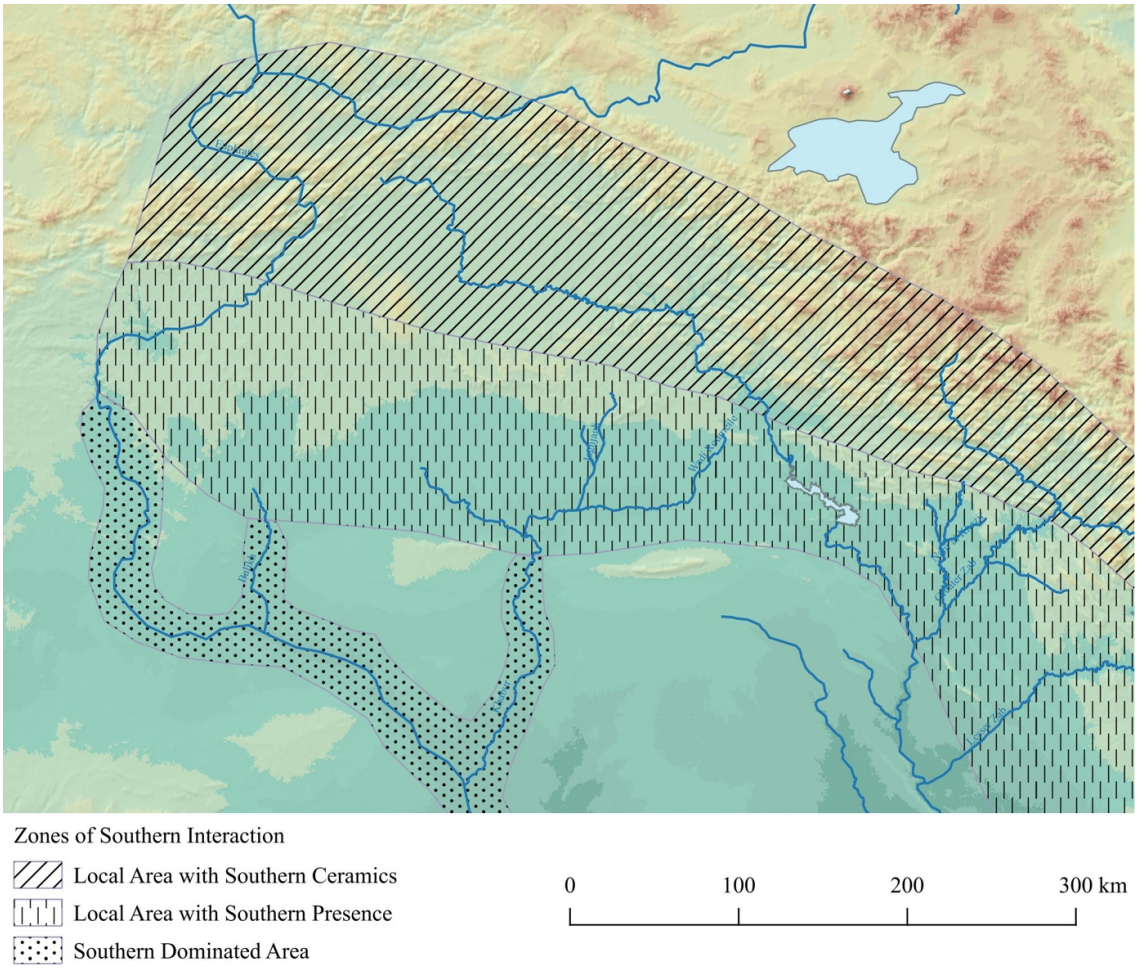

Fig. 13. Three zones of northern Mesopotamia during the "contact period" (redrawn from Lupton 1996: Fig. 3.19)

The expansion of southern Uruk might have involved direct contacts between the Southerners and local communities, and these relations could have had a varied character as well. In some cases, it could have been a peaceful coexistence of local and foreign communities, and generally, the existence of colonies or settlements of southern origin in northern Mesopotamia required cooperation from, or at least tolerance of, local communities (Rothman 2001: 363). But in other cases, the emergence of southern communities might have been violence-related, as at Tell Hamoukar. Traces of warfare or conflict are visible in the form of burned buildings and a large number of sling bullets and clay balls found in destruction debris and along the fortifications (Reichel 2006: 73). The destruction occurred around 3500 BC, ca. 300 years before the foundation of purely

southern settlements at Jebel Aruda and Habuba Kabira on the Euphrates (Reichel 2006: 70). The presence of Uruk material above the destruction layers may suggest that southern Mesopotamians were involved in the conflict (Reichel 2006: 73; Reichel 2007: 65; Reichel 2009: 80). During the LC1–2 period, Khirbat al-Fakhar, Tell Hamoukar's southern extension, was most probably involved in the production and trade of lithic (including obsidian) tools on a large scale,[86] perhaps also to the south. This trade network might have existed also in the 4th millennium BC when Tell Hamoukar had a well-developed metalworking industry as well, facilitated by the location of the site on the route to the copper sources in Anatolia. Thus, the existence of Tell Hamoukar, its prosperity and possible attempts to monopolize the trade of obsidian and metal might have caused a conflict of interests with southern Mesopotamians who wanted to eliminate the competition and secure their own access to these raw materials, which were completely absent in the south (Reichel 2006: 75; Reichel 2007: 66). Moreover, as was mentioned before (in the chapter on LC1–2), Pollock points out that obsidian blades were used in the south only in LC2–LC4 (Pollock 2001: 197).

One of the most widely accepted explanations of contacts between southern and northern Mesopotamia during the Uruk period was Algaze's model of "core-periphery relations" (Algaze 1993), which was based on Immanuel Wallerstein's "world-systems" theory.[87] It saw the reasons for Uruk expansion in southern Mesopotamia's need for raw materials, such as stone, wood, and metal, which were scarce there. Algaze assumed that southern city-states needed foreign resources to decorate temples and manifest their power. The desired resources were located beyond northern Mesopotamia, in the Taurus and Zagros mountains. The colonies were supposed to maintain exchange relations with the local people. The north, in turn, depended on southern Mesopotamian handicraft products (Akkermans, Schwartz 2003: 203; Wright 2001: 123). However, not many foreign stones and metals have been found in the Uruk-related settlements in the north as well as in southern Mesopotamia. Moreover, as Akkermans and Schwartz point out, metallurgy was already developed in eastern Anatolia, and thus the Anatolians did not need finished metal products from Mesopotamia (Akkermans, Schwartz 2003: 204).

[86] A survey undertaken on the so-called southern extension of the site discovered a large scatter of obsidian, which is dated to LC1–2. The results of the investigation suggest that Hamoukar was a production site for lithic tools (Reichel 2006: 74–75) and prove that the manufacture of tools had been practiced there for a very long time, as the lowest level reached is dated to the early LC period (5000 BC) (Reichel 2009: 84).
[87] For the application of the "world-systems" theory in archaeology, see, e.g., Kardulias 1999.

Algaze's model of "world-systems" applied to LC4–5 Mesopotamia has been contested by many researchers (Stein 1990; Rothman 2001; Pollock 1994; Lupton 1996; Wright 2001; Nissen 2001). Pollock criticizes Algaze for a "tendency to treat societies as monolithic, homogenous entities" (1994: 1482). She points out that Algaze assumes that contacts between northern and southern Mesopotamia benefited only the south, while the north experienced negative effects. In Pollock's opinion, reactions of local northern Mesopotamian people to the Southerners' expeditions to the north could have been varied. The southern Mesopotamian powers might not have been able to deal with significant local resistance. Pollock also notices that Algaze too often regards certain artifacts as evidence of the presence of Uruk people (Pollock 1994: 1482). Lupton points out that Algaze did not pay enough attention "to the role of pre-existing socio-political development in the 'periphery' in structuring the nature of exchange relationship with the south" (1996: 5). Wright (2001) argues that southern Mesopotamia was not completely lacking in useful resources as some of them occurred within the distance of a few days travel. Trees such as tamarisk, date palm, acacia, and jujube grew along the watercourses in the plain, and fine-grained stones could be found as pebbles in the foothills of the Zagros, but the people of southern Mesopotamia also used clay substitutes, for instance, clay sickles. Better-quality stone and chert occurred in the Syrian Desert to the south of the Middle Euphrates and also to the north-east of southern Mesopotamia and north-west of Susa. The only materials completely absent from southern Mesopotamia and its neighborhood were metal ores (Wright 2001: 133). Stein criticizes Algaze for assuming that processed goods from southern Mesopotamia were exchanged for raw materials from the north. He points out that Algaze's suggestion that the south was exporting grain, leather products, dried fish, dates, and textiles is based on the texts from the 3rd millennium BC which, in fact, mention that these products were exchanged on a local scale, between city-states (Stein 1990: 67). Rothman points out that the Uruk expansion could have been an information exchange rather than simply trading or exerting influence. The relations between different areas, communities, and people did not have to be based primarily on the economic exchange but may have been linked to the exchange of information, including religious concepts, ideology, culture, and technical information in particular. A good example of information sharing may be the spread of the new technology of slow-wheel pottery manufacturing in the Ubaid period (Rothman 2001: 362). The introduction of slow-wheel in the process of pottery production resulted in the standardization of shapes and unification of decoration. The similarity of pottery from

different regions is, according to Nissen (2001), the result of the spreading of the new technique across the region of Mesopotamia, an example of the exchange of thought rather than the result of a southern Mesopotamian migration (Nissen 2001: 168–169). Moreover, because of the slow-wheel, pots could be made faster, and fewer people were needed to produce the same number of vessels; the slow-wheel not only gave people more time to participate in other activities but also freed some human resources which could be then used in other areas.

One of the elements that helped to intensify the contacts between southern and northern Mesopotamia and between these regions and the highlands in Anatolia was the domestication of the donkey. Reaching distant places would have been much more difficult without these animals. Donkey bones found at Tell Rubeidheh (Middle Diyala valley), dated to the Middle Uruk period, suggest that donkeys had been domesticated at the site and, instead of being eaten, were used as beasts of burden (Payne 1988: 104; Wright 2001: 127). The domestication of the donkey enabled people to move more goods from one place to another. In later times, this animal was a crucial element of the 2nd-millennium Assyrian trade with Anatolia.

The long period of intensified relations within the region came to an end at the turn of the 4th millennium BC. During that time, the southern colonies in the north were abandoned, but the sites which featured both southern and local communities generally survived the Uruk collapse. Algaze explained this collapse as the result of the breakdown of the agricultural system in the south and assumed that the weakening of the south was an opportunity for the local elites in the north to gain power (Akkermans, Schwartz 2003: 207). Nissen, however, points out that the disruption in southern Mesopotamia after the end of the Uruk network did not happen, and that the south was, in fact, expanding internally. Although colonies such as Habuba Kabira and Jebel Aruda collapsed, the ties with other regions survived and perhaps underwent some reorganization. In fact, the influx of foreign goods increased. The disintegration of the Uruk network created a place for new networks to appear, related to the formation of the Proto-Elamite and Nineveh 5 culture (Nissen 2001: 174–175). Rothman is of a similar opinion. The southern states did not collapse after the colonies in the north had disappeared because trade with these colonies was not used to develop power but rather to manifest the control and power which the southern states already possessed. The further the place, the harder it is to control it, so the control exercised over land and people was limited. The authorities in southern Mesopotamia could rule only on the local scale, and trade and exchange played

a rather limited role in the development of their power (Rothman 2001: 355). Despite the fact that the southern colonies in northern Mesopotamia collapsed, the Iraqi Jazira and the Tigris Piedmont did not witness a "collapse" after the Uruk expansion had ended. The settlements in these regions existed for quite a long time after LC5, and in the following Ninevite 5 period, many new sites were established (Rothman 2001: 369, 384–385).

Settlement structures

The knowledge about settlement structures of the LC3–5 period in the region of northern Iraq and north-eastern Syria is limited. The excavated data come from a few large settlements like Tell Brak and Tell Hamoukar, from a smaller but important Tepe Gawra, and from several small settlements excavated within the framework of the salvage project in the region of the Eski Mosul Dam. Extensively excavated sites like Jebel Aruda, Habuba Kabira South, and Hacınebi, located far to the west, provide a lot of information, but they lie far from the UGZAR region; thus, their relevance may be questioned. The data concerning settlement structures derive from large complexes located in urban centers and from scarce architectural remains found at smaller sites, and thus are difficult to compare. However, various specialized structures are clearly observable on many sites.

Tell Hamoukar was one of the largest centers during the Late Chalcolithic period. The excavations undertaken in Area B of the site yielded remains of a large complex of administrative nature involved in food production and/or distribution (Reichel 2009: 79). The presence of large ovens indicates food production on a supra-domestic scale (Reichel 2006: 67–68). The complex consisted of two tripartite buildings[88] and surrounding units; in one of the buildings, large storage pots and grinders were found, indicating that processing of food took place there. A large number of clay sealings (173 pieces) support the assumption that it was not a simple domestic unit. Of a row of rooms exposed between these two tripartite buildings, one was equipped with grindstones, and the other contained a domed oven (Reichel 2006: 69–71). Moreover, copper tools found in Area B at Tell Hamoukar indicate that the metal-industry was well developed at the site (Reichel 2006: 75).

[88] The tripartite building consists of a large central hall with rooms on each of the longer sides. It resembles the houses from the Ubaid period, but the number of side-rooms is much smaller, and the ground plan includes only one central hall in contrast to some Ubaid-period buildings where the ground plan was a multiplication of the tripartite plan (Tell Abada). Moreover, Jason Ur points out that the "primary spatial difference between Uruk and Ubaid houses regards open space: in the Uruk period, external open-air activities were brought within the house compound in enclosed courtyards" (Ur 2014: 14).

A building engaged in food production on a large scale was found also in the LC3 levels at Tell Brak (area TW Level 18). The tripartite building called the Niched Building was equipped with numerous large ovens and grill structures used for cooking, probably baking or grilling meat. The building can be interpreted as a kind of a "feasting hall," a "guesthouse" or a "travelers' rest," or it could have been used by some formal institution. According to the excavators, the cooking equipment of the structure was big enough to prepare a large feast for the local elite (Oates et al. 2007: 594–596; Emberling, McDonald 2001: 21–31; Emberling, McDonald 2003: 23). Besides that, Tell Brak also served some religious functions. The remains of earlier structures discovered under the famous Eye Temple are dated to the Middle Uruk period (the Grey Brick Platform/the Grey Eye Temple).[89] From the Middle Uruk levels comes also a small building with the main room lined with wooden panels and the earliest known semi-columned façade. The building was burnt, and within its remains, eye-idols and huge amounts of jewelry made of various precious materials have been found (Ur, Karsgaard, Oates 2011: 7; Emberling, McDonald 2003: 8; Oates, Oates 1993: 178).

The culture of the topmost levels of the Late Chalcolithic period at Tell Brak[90] seems to have had a strong southern character. In these levels, a large house with a row of small rooms was found. Numerous baked clay cylinders, probably spools for thread, were found in this building, as well as a bone awl, spindle whorls, hammerstones, and large flint cores. The building was probably used for the production of lithic tools and the production or storage of thread (Oates, Oates 1997: 292–293; Emberling, McDonald 2003: 3).

The remains from the LC3 period occurred also at Tepe Gawra. The surviving remains of the Middle-Late Uruk occupation are contemporary with the LC3 period; later, the site was abandoned. The early phase of LC3 (level VIIIC) at Tepe Gawra is marked by a strong religious character of the settlement. Four buildings from level VIII were

[89] Sir Max Mallowan, who discovered the "Eye Temple," found below it the remains of a few earlier structures. Each of the earlier buildings was filled in with bricks and used as a platform for the new one. One of the earliest remains of the Eye Temple proper were called the Grey Eye Temple, dated by Mallowan to the Jemdet Nasr period (Mallowan 1947: 55–56). However, the results of recent excavations show that it should be dated to the Middle Uruk period (Oates, Oates 2002: 145–152; Oates, Oates 1994: 170). Yet earlier remains, the Red Eye Temple, were associated with beveled rim bowls and red slipped and painted sherds, still not published (Akkermans, Schwartz 2003: 1999). Mallowan dated the Red Eye Temple to the Uruk/Jemdet Nasr period (Mallowan 1947: 55–56), but it must have been earlier than the Grey Eye Temple.

[90] South Mesopotamian Middle Uruk pottery appears for the first time in the LC4 period, alongside local pottery (Ur, Karsgaard, Oates 2011: 6, 8). The succeeding levels seem to contain exclusively southern Uruk types, but it cannot be excluded that local material is present in the other parts of the site (Ur, Karsgaard, Oates 2011: 8).

interpreted by Speiser as temples or shrines: the Western Temple, the Central Shrine, the Eastern Temple, and the Northern Shrine (Speiser 1935: 25). Only the Eastern Temple from level VIIIC survived almost intact till the end of level VIIIA, while in the Northern Shrine some alterations were made (Speiser 1935: 32–33). Rothman reinterpreted the material and proposed a different vision of the site's function. According to him, only the so-called Eastern Temple had features of a typical temple and was designed for strictly religious purposes (Rothman 2002). The Northern Shrine seems to have been rather a structure that combined "religious ritual and 'secular,' economic and leadership functions" (Rothman 2002: 132). The Central Temple, according to Rothman, did not have a religious character at all, being rather a secular building, probably a kind of workshop, as indicated by craft and domestic objects, "variety of potentially high-status materials and tools to make them into finished products" (Rothman 2002: 132–133). Rothman doubts that the Western Temple was actually a temple since there were no such elements as a podium, niches, or ablution bowls. It was rather another secular, public building where "the collection and distribution of foodstuffs was coordinated"; later, it could have been used as a workshop since numerous blades and cores have been found there (Rothman 2002: 135–136). In the central part of the Tepe Gawra settlement stood a warehouse (Rothman 2002: 133). The presence of all these structures suggests that Tepe Gawra could have been a local center of some religious and trading functions and also involved in craft production.[91] Rothman believes that Tepe Gawra was a center involved in the distribution of obsidian since in level VIII its quantity was the highest compared to the other levels (Rothman 2002: 138–139). However, it must be kept in mind that Tepe Gawra is exceptional; nowhere else were the sites so extensively excavated, so it cannot be compared with the other settlements.

Architectural remains have also been found at smaller regional centers, such as Bab-w-Kur and Abu Dhahir. During the LC3–4 period, after a short abandonment, Bab in the Rania plain became the local center for the mass production of ceramics, as evidenced by 25 kilns found on the top of the tell (Boaz, Skuldbøl, Colantoni 2016: 8), while at the neighboring site called Kur, some ritual or administrative functions are indicated by the presence of a monumental building with niches and plastered walls (the building is dated to the LC3–4 period as well). Later, rubbish deposition took place at both sites—at Bab,

[91] The population of Tepe Gawra was rather small and probably consisted mainly of craftsmen and religious practitioners. There were no cooking installations which are usually interpreted as an indication of domestic functions (Rothman 2002: 138).

there were numerous large trash pits with potsherds from LC4–5, and at Kur, plenty of pits with mass-produced "vessels like Beveled Rim Bowls and Southern Middle-Late Uruk types" (Boaz, Skuldbøl, Colantoni 2016: 9). It seems that in the case of these neighboring settlements, the industrial and ritual/administrative activities were separated.

Abu Dhahir,[92] excavated in the framework of the Eski Mosul Dam Salvage Project, where beveled rim bowls have been found, was the largest Late Uruk site in the Zammar region, possibly serving as a local center. An area for the manufacture of pottery, including kilns, has been found which might suggest that the site was involved in the distribution of pottery in the region (Simpson 2007: 47–48, 55).

A quite common feature at LC3–5 settlements were structures composed of parallel walls, sometimes called "granary racks." In the Eski Mosul Dam Salvage Project area, they occurred at Tell Mohammed 'Arab, Tell Karrana 3 (a few such structures have been found), Tell Rijim, and Siyana Ulya (Roaf 1984: 155; Wilhelm, Zaccagnini 1993: 21–26; Bieliński 1987b: 31; Bieliński 1992: 280; Ball, Gill 2003: 23–24). At all of these sites, they were dated to the Late Uruk period.[93] The walls of these structures were parallel, with narrow[94] spaces between them. These spaces yielded some remains of plants or animal bones – at Siyana Ulya, there were bones of an equid (perhaps donkey) and a dog; however, no traces of carbonized remains or seeds were found (Ball 1987: 79; Ball, Gill 2003: 23–24, Fig. 7; Ball, Wilkinson 2003: 337–338). Conversely, at Tell Karrana 3, carbonized grain, as well as animal bones, were found in a similar structure (Wilhelm, Zaccagnini 1993: 21–22, 25). At Tell Karrana 3, imprints of reeds were observed on the plaster covering the walls and on lumps of clay lying between the walls (Wilhelm, Zaccagnini 1993: 25–26). This might suggest that there was some kind of a superstructure or that the parallel walls were used as platforms allowing for air circulation underneath. Were it so, they might have been used for drying grain or meat, or constituted a support on which the granary was constructed. Similar structures occurred already in the earlier periods, as well as in the succeeding Ninevite 5 period (Zaccagnini 1993: 29–33).

[92] In the report from 1987, Ball mentions that the Uruk levels at Tell Abu Dhahir contained many mud-brick structures (Ball 1987: 79); however, in the later publication (Simpson 2007), only one wall is mentioned, together with Late Uruk pits and kilns.

[93] A similar structure with a grill pattern has been found at Tell Brak in area TW. The structure is dated to the transitional Late Uruk/Ninevite 5 period (Oates, Oates 1991: 138, Pl. XXXI a).

[94] At Tell Mohammed 'Arab, the parallel walls were about 80 cm apart (Roaf 1984: 155); at Tell Karrana 3, the distance between the walls measured 33–38 cm (Wilhelm, Zaccagnini 1993: 22).

Procurement of raw materials and contacts with other regions

The variety of raw materials known from the previous period continued to be in use in the Middle and Late Uruk times. However, precious stones brought from distant places were present mainly on large urban sites. The presence of obsidian (blades and cores) at Tepe Gawra increased significantly in level VIII, while in southern Mesopotamia, the largest quantities of obsidian come from LC2–4 (Rothman 2001: 379; Pollock 2001: 197). The high number of obsidian tools present in strata VIII at Tepe Gawra (Speiser 1935: 132, 152; Rothman 2002: 388–394) suggests that the settlement was involved in their production and distribution (Rothman 2002). Obsidian was also common in the 4th millennium BC layers at Tell Brak, where the Niched Building has yielded obsidian blades, scattered mainly in the courtyard, that comprised 28% of the total number of flakes and blades. One of the Late Uruk pits in area TW has yielded obsidian as well (Emberling et al. 1999: 6, 31, 36). At Tell Karrana 3, in turn, obsidian constituted only a small fraction of the lithic material (Brautlecht 1993: 150). Tell Brak and Tepe Gawra must have maintained relations with some distant regions. The variety of precious materials present at these sites is astonishing; beads of carnelian, rock crystal, agate, amethyst, turquoise, gold,[95] and silver were found there. At Tepe Gawra, most of the beads were found in graves, while at Tell Brak, the courtyard of the Niched Building from TW level 16 yielded 3600 beads in total[96] (Speiser 1935: 134; Emberling, McDonald 2003: 8; Oates, Oates 1993: 178). Level VIII at Tepe Gawra also yielded plenty of objects made of bronze[97] and copper such as sickle blades, chisels, needles, awls, nails, hooks, an embossed ornament, a bracelet, and a pin with a lapis lazuli head formed by hammering (Speiser 1935: 114–115; Rothman 2002: 394).[98] At the small site Tell Karrana 3, the only precious material found was carnelian (Stein 1993a: 137).

The difference in the number of precious materials between large and important settlements and the smaller ones is not surprising. Large urban settlements are centers where religious activities, craft specialization, and exchange develop most intensively; thus, they have a tendency to accumulate wealth.

[95] At Tepe Gawra, a few gold objects were found in child burials (Speiser 1935: 101).
[96] http://www.tellbrak.mcdonald.cam.ac.uk/latechalcolithic.html (accessed 28.07.2018).
[97] In his *Artifacts from Occupation Levels XII–VIII* catalog, Rothman identified numerous objects as made of bronze (Rothman 2002).
[98] The number of copper objects increased significantly with time; Speiser lists 22 copper objects for level VIII, 42 for level VII (the period of Ninevite 5 pottery), and 334 for level VI (mid to late 3rd millennium BC).

Food sources – land use

There are not many studies concerning food remains. Generally, barley was predominant among the crops, but in the inner Taurus mountains, wheat seems to have been the major grain. Remains of lentils, peas, grapes, figs, olives, and flax were found as well. In the case of faunal remains, there is a contrast between sites where sheep and goat predominate, those where pigs and cattle dominate, and those where wild animals constitute the majority of identified bones (Wright 2001: 131–132; Stein, Nicola 1996; Zeder 1994). The high ratio of sheep and goats might indicate that the use of wool increased (Pollock 1999: 106–110).

At Hacınebi,[99] the patterns of animal use differ between the "pre-contact" period and the period of contacts with southern Mesopotamia. Judging from the composition of animal bone samples, the most popular animal species were *Caprinae* (sheep and goats), pig, and cattle. The bones of sheep and goats were the most common; however, while in the pre-contact strata *Caprinae* constituted only 43.89% of the identified bones, during the period of contacts with southern Mesopotamia their number increased significantly to 72% of the sample. During the contact period, there was also a difference between areas of the site yielding local and Uruk assemblages. In the area of the site representing the southern Uruk material culture at Hacınebi, *Caprinae* formed 83% of the sample (the number of pig and cattle remains was very low), while in the deposits of a local character the ratio of *Caprinae* was much lower, constituting only 45% of the sample (pig and cattle accounted for 32% and 20% respectively). The high percentage of *Caprinae* is characteristic for animal husbandry pattern typical of Uruk Mesopotamia.[100] Thus, the high ratio of *Caprinae* in deposits with southern Uruk material might be related to the food preferences of the foreigners. These results, together with ceramic, glyptic and other artifacts, suggest that an enclave of the Southerners was present at Hacınebi (Stein, Nicola 1996: 258–260). A similar situation occurred at Tell Brak where a high number of sheep and goat bones (more than 90%) is evidenced in the Middle Uruk period, in contrast to the later periods when the percentage of *Caprinae* ranged from 50 to 40%, and to the

[99] Hacınebi is dated to the Middle and early Late Uruk (Stein, Mısır 1996: 220–222; Wright, Rupley 2001: 105–110).

[100] A high number of sheep and goat remains was registered on southern Uruk sites of Tell Rubeideh in the Hamrin basin (Payne 1988: 115), Sharafabad in southern Khuzistan (Wright, Miller, Redding 1981: 276, Table V), and Farukhabad in the Deh Luran plain (Redding 1981: Table 66). According to Payne (1988: 114), the data from Farukhabad is hard to interpret because "gazelle is included in the fusion data together with sheep and goat." See also the chart in Stein and Nicola (1996: Fig. 35) where the percentage values for Farukhabad differ from the values given by Payne (1988).

earlier period when it was quite high (ca. 75%) but still lower than the one typical for the south Mesopotamian contexts. Such a high ratio of *Caprinae* in the Middle Uruk phase is again interpreted as an indication of the presence of southern Mesopotamians at the site (Dobney, Jaques, Van Neer 2003: 418–419).

The specialization in sheep and goat husbandry is visible on many sites; however, at some of them, wild species played an important role or even predominated in the bone assemblages (Akkermans, Schwartz 2003: 206–207). At the Late Uruk site Umm Qseir in the Khabur Triangle, wild animals constituted the majority, even greater than in the Halaf period. The most important game was onager, while the frequency of gazelle declined and that of wild cattle increased (Zeder 1994: 113). The botanical samples from Umm Qseir support the interpretation of the site as a kind of "transitory encampment or special function site." There were almost exclusively remains of spring-harvested cultigens (Zeder 1994: 116). The site of Tell Karrana 3 might have also been quite specialized. Plant remains retrieved from the area of the "granaries" or so-called Parallel Walls Structures included domestic einkorn wheat and emmer wheat, which was the most important crop. Grains of two-row barley (wild and domesticated) were in minority. Multi-row hulled barley and hulled six-row barley were also represented. Very scarce remains of lentil and flax seeds were found as well (Constantini, Constantini Biasini 1993: 237–242). The remains of Tell Karrana 3 are interpreted as an "isolated agricultural complex (a farm-house, a '*villa rustica*' or such like)" (Wilhelm, Zaccagnini 1993: 251) rather than a small village. The place was used for processing and storing cereals, and also meat and other products (Wilhelm, Zaccagnini 1993: 251).

Burial customs

Graves from the Uruk period were rarely found in southern Mesopotamia but are more frequent in the north. In the Ubaid period, the burials of children and adults were separated; conversely, they appear together in the Late Chalcolithic period (McMahon, Stone 2013: 92–94).

At Tepe Gawra, there were 20 or 22 graves[101]. They were located within the settlement, and the majority of the unearthed skeletons belonged to children (Speiser

[101] Speiser lists seven graves associated with the Western Temple and six with the Eastern Temple (Speiser 1935:141-143). Tobler lists another group of seven graves associated with the Western Temple, also mentioning four graves located below the Eastern Temple and listed already by Speiser (although Speiser listed six of these graves). Tobler also mentions two additional, isolated graves (Tobler 1950: 98-99).

1935: 140-143; Tobler 1950: 111, Table B). Some of the graves were located around the Western Temple or below the Eastern Temple (Tobler 1950: 98–99). Children were most often buried in urns or in simple pit graves (Tobler 1950: 106, Table A). Some burial goods like beads were found in the graves but no vessels (Speiser 1935: 141). In addition to these simple graves, the LC3 period at Tepe Gawra yielded so-called tombs (graves with mud-brick and/or stone construction, described in the previous chapter). Twenty-five out of eighty tombs found at the site originated from stratum VIII:[102] three from VIIIB and twenty-two from VIIIC (Tobler 1950: 68, Table D). Adults were found in five tombs from stratum VIII only (Tobler 1950: 78). In this period, the tombs were especially rich, and in two of them, seals made of lapis lazuli were found buried with the dead (Rothman 2002: 139).

Four graves of children were also found at Tell Karrana 3. These were mostly pot burials containing very young or even stillborn children. Grave goods were sparse; in one case, a bead necklace was found (Stein 1993b: 203).

There is no doubt that the limited number of discovered graves does not represent the whole population and that there must have been cemeteries located outside the settlement or at least on its peripheries. In the case of Tell Brak, the excavations in the Outer Town confirmed the archaeologists' assumption that the urban border zone was used for "dirty" industrial activities (such as pottery production, tanning/dyeing or fulling textiles, as confirmed by archaeological findings), rubbish disposal, and, moreover, for burials (McMahon 2013: 71; McMahon, Stone 2013: 96). In the Outer Town of Tell Brak, burials were discovered on two mounds: Tell Majnuna (to the north-west of Tell Brak) and Tell T2 (to the east of Tell Brak). Both of them were used as a burial place for adults and infants; however, the nature of these burials was different.

On Tell T2, a small mound of an industrial character, seventeen graves of the LC3 period were discovered, nine belonging to adults and eight to infants. The adults' graves seem to be slightly older than the infants' graves. Infants were usually placed in cooking pots or storage vessels covered either with plates, mud-bricks, or large sherds, but there were two exceptions: one infant was buried in a simple pit grave, and another was placed in a rubbish layer. Adults were buried in rubbish layers or in grave pits of oval or rectangular shape. The placement of the graves outside the main settlement might have had various meanings, from negative, like the exclusion of the dead from society, to

[102] The remaining tombs belong to strata XIA–IX and were described in the previous chapter (LC1–2).

positive ones, like the manifestation of the incorporation of new spaces (McMahon, Stone 2013: 99–102; McMahon 2013: 74).

The burials at Tell Majnuna were different. Four mass graves were exposed there, most likely containing victims of violent conflict. The graves are dated to LC3 (McMahon 2013: 79–80). The first and largest of these mass graves, located in area MTW, is dated to ca. 3800 BC. It was created in a single, short event. The skeletons were disarticulated, hands and feet were rare, and the bones were mingled suggesting a secondary deposition. The disarticulation was the result of natural decomposition and not a deliberate act. According to the researchers, the pattern of disarticulation suggests that the bodies must have been exposed to the open air for weeks or months, but not much longer. The majority of bones belonged to adults between 20 and 40 years old. There were also some children at the age of 7 to 14 and adolescents 15–20 years old. Bones of children younger than 6 years old were rare. Males constituted the majority of the dead at ca. 65%. The bones lacked perimortem injuries but had evidence of healed cranial injuries which might have been inflicted during previous conflicts. The other mass grave, located in area EM, was later and smaller than the MTW mass grave. The level of disarticulation of skeletons was higher than in the case of the MTW mass grave, and it was again the result of natural processes. In this mass grave, the proportion of children was higher—some of them were aged between 1 and 3 years old—and there were also some bones belonging to older adults over 40 years of age. In contrast to the MTW mass grave, females formed the majority, reaching ca. 68%. The third mass grave, located in area EME 3, is dated to 3700 BC (the grave was only partly excavated). In this case, as well, the skeletons were disarticulated. The fourth mass grave, located in area EME 1–2, is dated to 3600 BC (McMahon, Sołtysiak, Weber 2011: 206–214). According to the researchers, these mass graves were the result of "internal conflict among the inhabitants of the city and its dependent hinterland" (McMahon, Sołtysiak, Weber 2011: 216).

The various forms of graves, the simple graves and tombs, the grave goods, and the placement of the graves might indicate social stratification. The fact that tombs were used for the burials of children might indicate that social status was hereditary. It is also intriguing why some of the graves, even those with no or poor grave goods, were placed within the settlement while others were not.

Settlements' distribution and dynamics

Behnam Abu Al-Soof (1964, 1968), on the basis of the data collected during surveys undertaken by the Iraqi Directorate of Antiquities between the years 1938–1965, provided information about 150 sites from the LC period (labeled by him as the Uruk period) distributed throughout the Erbil, Mosul, Kirkuk, and Sulaimaniyah provinces. However, recent surveys prove that the number of Uruk sites in these areas was much higher.

The interpretation of the results of Wilkinson and Tucker's and Ibrahim's surveys is very problematic. Firstly, they do not differentiate between Early and Middle-Late Uruk assemblages, using instead a more general term "Uruk." Thus, the estimations presented below are very rough, especially since the whole Uruk period lasted for a very long time. Moreover, Ibrahim, in contrast to Wilkinson and Tucker, does not indicate whether there were any southern Uruk potsherds present. Secondly, neither of the surveys mentions the presence of pottery from the transitional phase between the Uruk and Ninevite 5 periods.[103] Wilkinson and Tucker mention that "no separate pottery assemblage for the transition between the Late Uruk and Ninevite 5 has been isolated for the survey" (Wilkinson, Tucker 1995: 49). They point out that on the basis of the survey data, it is impossible to determine whether there was a continuity of occupation between the Uruk and Ninevite 5 periods. When they compared the general data on the Uruk and Ninevite 5-period settlement, the level of continuity was low. Also, the number of early Ninevite 5 potsherds was low which may, in fact, result from various factors (Wilkinson, Tucker 1995: 49). The results of Kintigh's equation can differ depending on whether we assume that there was continuity or abandonment between the periods. Since there is no strong indication of either continuity or abandonment in the case of these two surveys, I will present the results of Kintigh's equation for both situations. The Uruk period lasted ca. 1500 years, and most probably, not all of the settlements from this period were occupied at the same time. Kintigh's formula can give an idea of the average number of settlements occupied contemporaneously. However, the results must be treated only as a more or less plausible hypothesis and not necessarily a reflection of the reality.

As has been already demonstrated, the urbanization in the North Jazira Project area began in the earlier Uruk period (LC1–2). But in later Uruk, this tendency seems to have reversed, as the settlement at Tell al-Hawa reduced its size (Ball, Wilkinson 2003: 343–344). There were 62 sites with northern Uruk material (an increase in

[103] For more information about the pottery from the transitional phase between Late Uruk and Ninevite 5, see the chapter on period 6 (Ninevite 5).

comparison to the Ubaid period) dispersed over the entire North Jazira survey area (Wilkinson, Tucker 1995: 44).

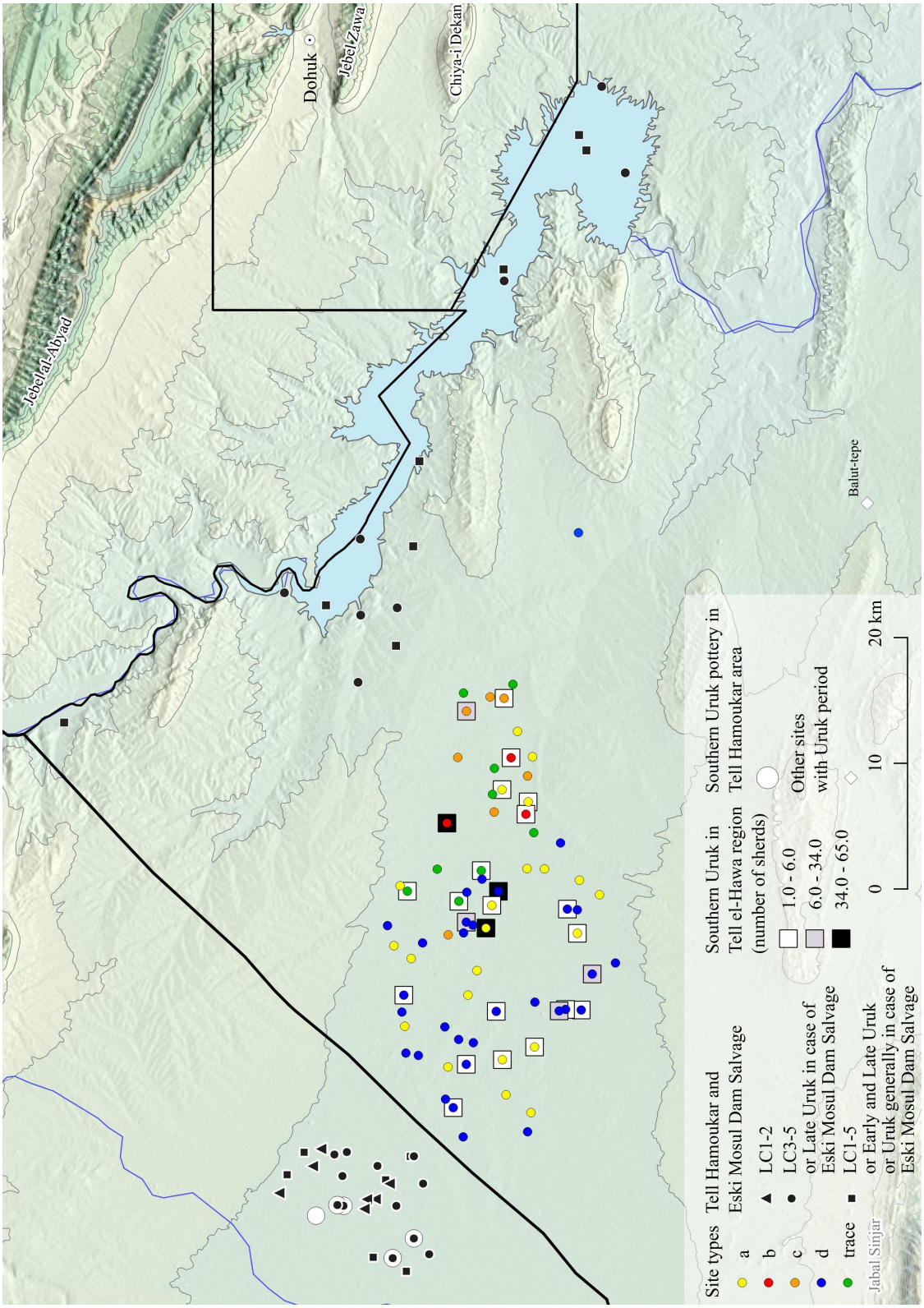

Fig. 14. LC1–5-period occupation in the regions of Tell Hamoukar, Eski Mosul Dam, and Tell al-Hawa (map: J. Mardas)

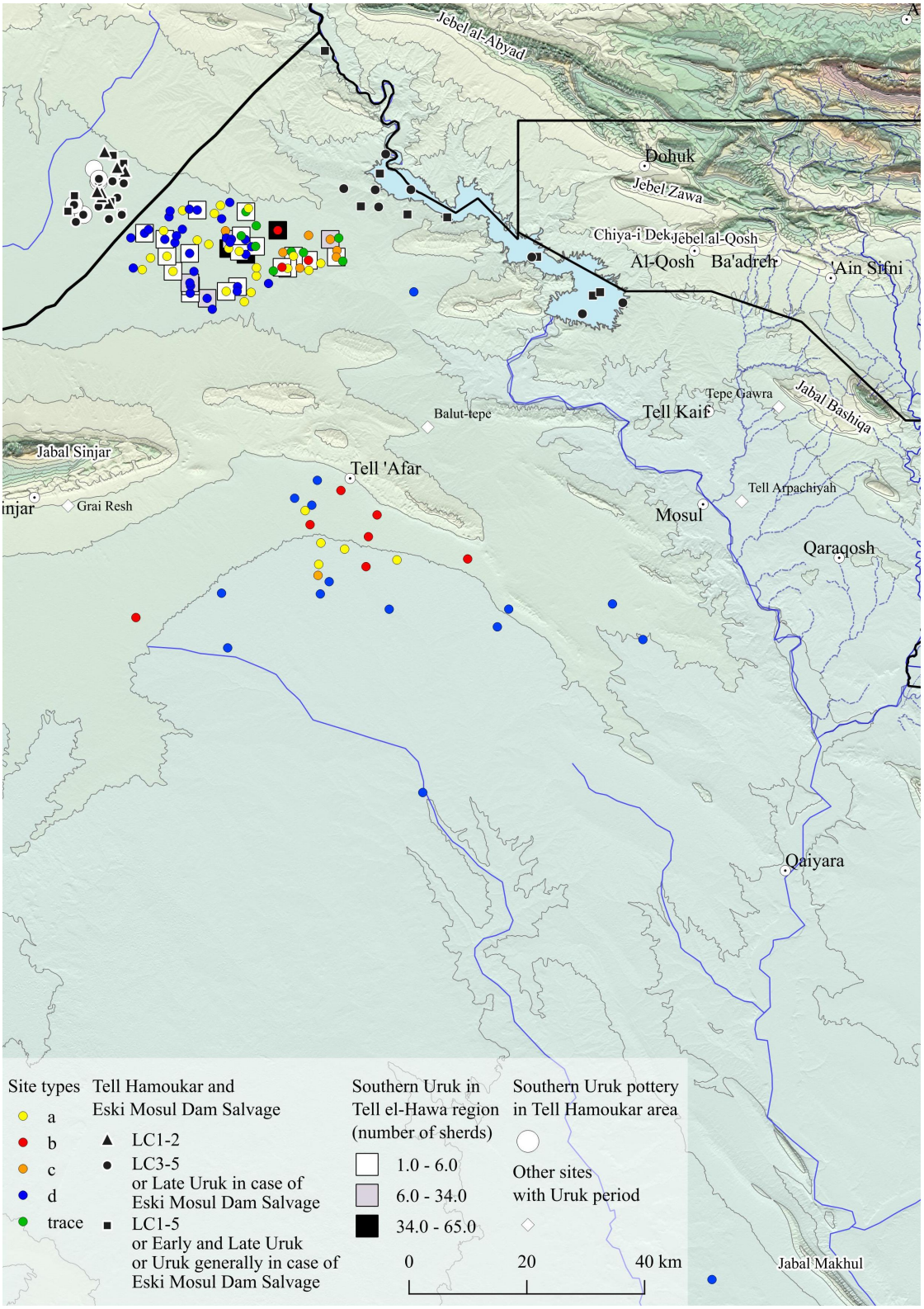

Fig. 15. LC1–5-period occupation in the regions of Tell Hamoukar, Eski Mosul Dam, Tell al-Hawa, and Tell 'Afar (map: J. Mardas)

The settlements with southern Uruk material were much less numerous (26 sites), and they seem to have been clustered mainly in the vicinity of the hollow way routes (Wilkinson, Tucker 1995: 45, Fig. 36). It is also visible (Fig. 14) that sites which, apart from LC pottery, had also potsherds from the Ninevite 5 period (sites of *type c* and *b*) were all located closer to Tell al-Hawa (within a radius of 11 km) than sites which did not have Ninevite 5 pottery (sites of *type a* and *d*). All the settlements abandoned during the Late Chalcolithic period were located in remote western, north-western, and south-western parts of the studied area. A quite high number (15) of sites of *type c* and *d* were reoccupying places that had been previously settled in the Neolithic (Hassuna and Halaf) period.

In the Tell al-Hawa region, the rate of abandonment was extremely high—reaching 83.87%, if we assume that some sites could have been continuously occupied till Ninevite 5 (potentially, there were only 10 such settlements and 7 new ones). If there was no continuity and the 10 settlements in question were resettled in the following period after a brief abandonment, the rate could be as high as 100%. Also, the rate of occupation and abandonment according to Dewar's (1991: 609) equation is high in both cases. Kintigh's formula (Tables 12, 13) indicates that the average number of contemporaneously occupied sites varied between 17.5 and 26.68 if there was some continuity or between ca. 12.5 and 19.96 in the case of abandonment; regardless of which situation really occurred, the average number of contemporaneous settlements was much lower than the total number of sites from this period.

The settlement of the later Uruk period in the Zammar region looked different; the number of sites increased significantly, with Abu Dhahir serving most probably as a local center again (Ball 2003: 11–12, Table 2).

The region investigated by Ibrahim seems to represent a trend similar to that of the Tell al-Hawa area. Most of the sites which yielded no pottery from the following Ninevite 5 period (sites of *type a* and *d*) appeared on the southern periphery of the Tell 'Afar region (Fig. 15). As in the case of Tell al-Hawa, the number of abandoned sites was high, affecting 20 of 28 sites in evidence (71%) if there was some continuity, or even constituting 100% if there was an episode of total abandonment of the area. In both cases, the rates of establishment are lower than the rates of abandonment (Tables 14, 15), and the difference between them is larger in the scenario of the whole area being abandoned, suggesting more dynamic changes. The settlements which also yielded pottery from the preceding and/or following periods seem to be concentrated around Tell 'Afar; only one settlement (Tell

Hadhail, a very large multi-period site) was located further to the south-west. Only one settlement established within the period was resettled or perhaps continued to be occupied also in the following Ninevite 5 period. Most of the sites (75%) established in the LC period had no traces of occupation from the earlier period; these were completely new settlements. They were located to the south of Tell 'Afar (Fig. 15), at the margin of the zone occupied by settlements most of which had existed since the Hassuna/Samarra period. Only 25% of the established settlements were located in previously occupied places; the rate is similar to that identified for the Ubaid period.

Table 12. Uruk-period occupation in the Tell al-Hawa region (assuming continuity at some sites)

a	*b*	*c*	*d*	Occ_{abc}	Occ_{d+}	Occ_{d-}	Occ_{d}	*Occ*	*Min. no of sites at period's*		*p**	E_{occ}	A_{Occ}	*Total no of sites*
									beginning	*end*				
22	3	7	30	17.5	5.68	12.69	9.18	26.68	25	10	1500	0.025	0.035	62

Table 13. Uruk-period occupation in the Tell al-Hawa region (assuming abandonment of the area)

a	*b*	*c*	*d*	Occ_{abc}	Occ_{d+}	Occ_{d-}	Occ_{d}	*Occ*	*Min. no of sites at period's*		*p**	E_{occ}	A_{Occ}	*Total no of sites*
									beginning	*end*				
25	0	0	37	12.5	0	14.92	7.46	19.96	25	0	1500	0.025	0.041	62

Table 14. Uruk-period occupation in the Tell 'Afar region (assuming continuity at some sites)

a	*b*	*c*	*d*	Occ_{abc}	Occ_{d+}	Occ_{d-}	Occ_{d}	*Occ*	*Min. no of sites at period's*		*p**	E_{occ}	A_{Occ}	*Total no of sites*
									beginning	*end*				
6	7	1	14	10.5	0.93	4.2	2.57	13.07	13	8	1500	0.01	0.013	28

Table 15. Uruk-period occupation in the Tell 'Afar region (assuming abandonment of the area)

a	*b*	*c*	*d*	Occ_{abc}	Occ_{d+}	Occ_{d-}	Occ_{d}	*Occ*	*Min. no of sites at period's*		*p**	E_{occ}	A_{Occ}	*Total no of sites*
									beginning	*end*				
13	0	0	15	6.5	0	6.96	3.48	9.98	13	0	1500	0.01	0.019	28

Table 16. LC3–5-period occupation in the Tell Hamoukar region

a	*b*	*c*	*d*	Occ_{abc}	Occ_{d+}	Occ_{d-}	Occ_{d}	*Occ*	*Min. no of sites at period's*		*p**	E_{occ}	A_{Occ}	*Total no of sites*
									beginning	*end*				
6	0	0	13	3	0	4.11	2.05	5.05	6	0	800	0.016	0.024	19

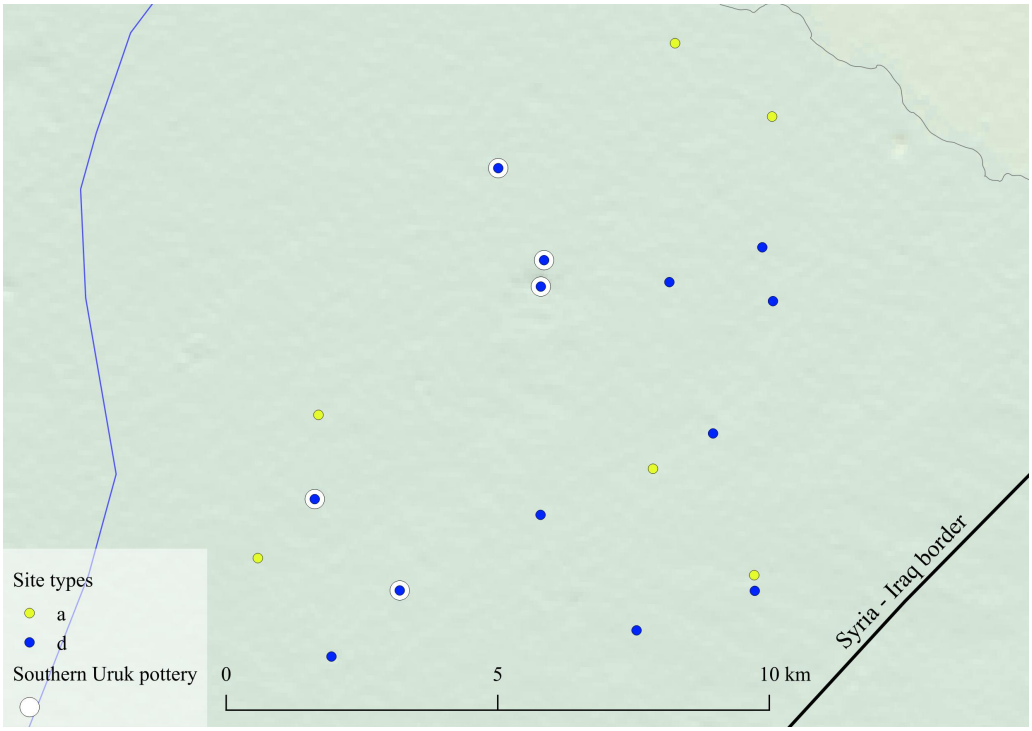

Fig. 16. LC3–5-period occupation in the Tell Hamoukar region (map: J. Mardas)

In the case of the Tell Hamoukar survey (Fig. 16), the large site THS25 (Hamoukar's southern extension, also known as Khirbat al-Fakhar) which had flourished in the previous period was abandoned at the beginning of LC3–5. The settlement of the LC3–5 period consisted of multiple nucleated towns and small villages (their average size grew slightly in comparison to the previous period). The number of settlements increased slightly; there were 19 sites, and the majority of them were located in the eastern part of the survey. Among these 19 sites, four had local and southern Uruk pottery, and one yielded only southern Uruk types (Ur 2010: 98–100). All LC3–5 settlements in the Tell Hamoukar area were abandoned before the Ninevite 5 period. According to Kintigh's formula (Table 16), the average number of contemporaneously occupied sites ranged from 3 to 5. These values might be slightly underestimated since no sites of *type c* or *b* have been identified in the area. The difference between the rates of establishment and

abandonment is quite large, suggesting changes in the settlement which are also confirmed by the fact that none of the LC3–5 sites was occupied in the next period.

The survey around Tell Leilan has recorded during the 1995 season 25 sites in total; however, according to Rova, the number of settlements was decreasing since the early LC3. There are 14 sites dated to the early LC3 (including 8 which continued from the previous phase and 4 which continued in the following one), 12 sites are described as Late LC3–4 local Uruk assemblage, and 5 (or 7) sites have Late LC4–5 southern Uruk assemblage (Brustolon, Rova 2007: 30–37, Figs 10–14). There is no transitional pottery from the phase between the Uruk and Ninevite 5 periods (Ristvet 2005: 57).

In the area investigated by the LoNAP, a small decrease in the number of sites occurred in the LC3–5 period, as only 115 sites were occupied then. In total, there were 168 Late Chalcolithic sites, that is, three times more than the number of sites occupied during the Ubaid period. Out of these 168 sites, 72 were occupied during the whole period, 53 were abandoned in LC1–2, and 43 new sites were established in LC3–5. There were only 10 sites with southern Uruk material dispersed throughout the area of the project, represented by 19 identified sherds. It is remarkable that the number of sites with southern Uruk material and their density in the LoNAP area were so low. It cannot be considered as an indication of a permanent presence of the Southerners but rather as a result of occasional contacts or exchange (Koliński, personal communication). The settlements in the region were quite evenly distributed, although a concentration of sites occurred on the Navkur plain, in the region of Tell Gomel and in the eastern part of the Navkur plain, to the south-west of Rovia. Many settlements were located in the area to the south of Al-Qosh, Ba'adreh, and Sheikhan as well. Some sites were encountered to the north of Chiya-i Dekan and Jebel al-Qosh and also to the north-west of Dohuk (Iamoni 2017).

In the region investigated by the EHAS, 14 settlements dated to LC3–5 were identified, but most of the sites occupied in the previous period had been abandoned. Six new settlements appeared to the south of Jebel al-Abyad (Sax-e Bixer) and three along the Khabur river in the Sindya plain. Out of 14 settlements of the LC3–5 period, six had both northern and southern Uruk material; most of them were located on the Tigris plain east of the river (Sconzo 2017a).

In the area of the EPAS project, the number of settlements increased to 23 during LC3–5, of which 17 yielded northern Uruk pottery and 22 southern Uruk pottery (16 sites had both northern and southern types). Some of the sites were abandoned in LC3, for

example, Helawa, Qalinj Agha, and Tell Nader, others continued to be in use throughout LC3–5. The size of the sites varied, ranging from less than 1 ha up to 5 ha. There were also bigger sites like Tell Baqrta which reached 90 ha in the late 3rd millennium BC and could also have been an important settlement in LC2–4 (Peyronel, Vacca 2015: 95–96). Most of the LC3–5 settlements were dispersed quite evenly in the southern part of the area of the EPAS concession, while some of the remaining ones lay closer to Erbil (Ur 2017a).

The situation in the southern part of the EPAS region looks different than in the LoNAP and EHAS areas. Firstly, in LC3–5, the number of settlements in the EPAS region increased in respect to the LC1–2 period, in contrast to the decrease observable in the other two regions. Secondly, in the EPAS region, there were plenty of sites with southern Uruk material, which perhaps indicates that settlements in the EPAS region had more intensive relations with southern Mesopotamia. The Erbil plain is also an area where routes leading to the north-west and east through the Rania plain cross.

Preliminary results of the Rania Plain Survey indicate that during the LC period, the settlement was particularly dense. Many prehistoric sites show evidence of long-term continuity of occupation. There is also a remarkable increase in the number of sites: from only 2 in Ubaid to 8 in LC 1–2 and 24 in the late LC 3–5 period, 14 of which yielded southern material (Boaz, Skuldbøl, Colantoni 2016: 14–17). Al-Soof (1964, 1968, 1970) listed as many as 17 sites in the Rania plain dated to the Uruk period. Few sites recorded by the Rania Plain Survey overlap with those identified by Al-Soof. During the LC period, small sites in the Rania plain clustered around Bab-w-Kur. Thus, settlement complexity could have existed even in such peripheral areas as the Rania plain (Boaz, Skuldbøl, Colantoni 2016: 17). However, Bab-w-Kur was not a primary center, and its role seems to have decreased in the later phases of LC. According to the researchers, the hierarchical settlement pattern, known from the Khabur or Tell al-Hawa regions, has not been attested so far in the Rania plain. However, they assume that "a primary centre was located nearby, along the Lesser Zab river that flowed through the centre of the plain" (Boaz, Skuldbøl, Colantoni 2016: 20).

The UGZAR area

Generally speaking, there were 18 sites dated to the LC3–5 period, which means a decrease in comparison to 25 sites from the LC1–2 period. The settlement continued on

the Navkur plain and in the Karabak valley (Fig. 17). A few settlements appeared along the Bastora and the Greater Zab rivers. One settlement was located on a later route leading to the Harir plain. The Harir plain seems to have been abandoned during this period; no settlements with either northern or southern Uruk material have been found there.

The settlement in the Karabak valley and on the Navkur plain seems quite stable. Five sites located in this area yielded pottery from LC 1–2 and LC3–5, and they were also used in the succeeding Ninevite 5 period. Three more sites from this period had sherds dated to LC1–2 but without Ninevite 5 ones. Two of them, US061 and US063, were located in the Karabak valley, and the third one, US006, lay on the northern edge of the Navkur plain. US006 was in the vicinity of US004; perhaps both sites coexisted for some time during the period. These two sites were abandoned before the Ninevite 5 period. Site US004 was resettled in the early phase of the Ninevite 5 period (painted pottery was found at the site), and a new settlement US005 (ca. 100 m to the north-east of US004) seems to have been created later during Ninevite 5 (painted pottery was not found at US005). In the south-eastern part of the Navkur plain, only one new settlement, US038, was created in LC3–5, and after abandonment during the period, it was resettled in Ninevite 5.

During the LC3–5 period, settlement appeared for the first time along the Bastora. Sherds of southern Uruk pottery were found on two overlapping sites, US291 and US292, but since the Chalcolithic sherds were present on US291 only in the area which was common for both sites, it seems that they should be linked to the latter and not the former site. US291 has also yielded sherds from the Ninevite 5 period, but only from an area which is ca. 200 m away from US292.

There is yet another site, US301, located by the wadi which flows from the north-eastern direction and whose valley could have been used as a route leading towards the Dere plain and site US273 located ca. 8 km to the north-east. US301 yielded only one isolated sherd which was identified as belonging to southern Uruk pottery, while on US273, a quite abundant collection of mixed southern and northern Uruk sherds was collected. The site US273 is located on the medieval caravan track leading towards Rawanduz and Azerbaijan (Marf 2016: 129).

Three LC3–5 sites were located in the region of the confluence of the Bastora and the Greater Zab (only the northern bank of the Bastora has been surveyed by the UGZAR). One of them, US128, was located to the south of the confluence, on the edge of the Greater Zab's terrace. The site yielded only one southern Uruk sherd; no other LC3–5 material was attested. Much better evidence of occupation at this site comes from

the Ninevite 5 period. From site US128 a path leads to US120 and then further north to the Karabak valley. This is a modern path, but perhaps the route was used also in the past. The sites are 6.7 km apart.

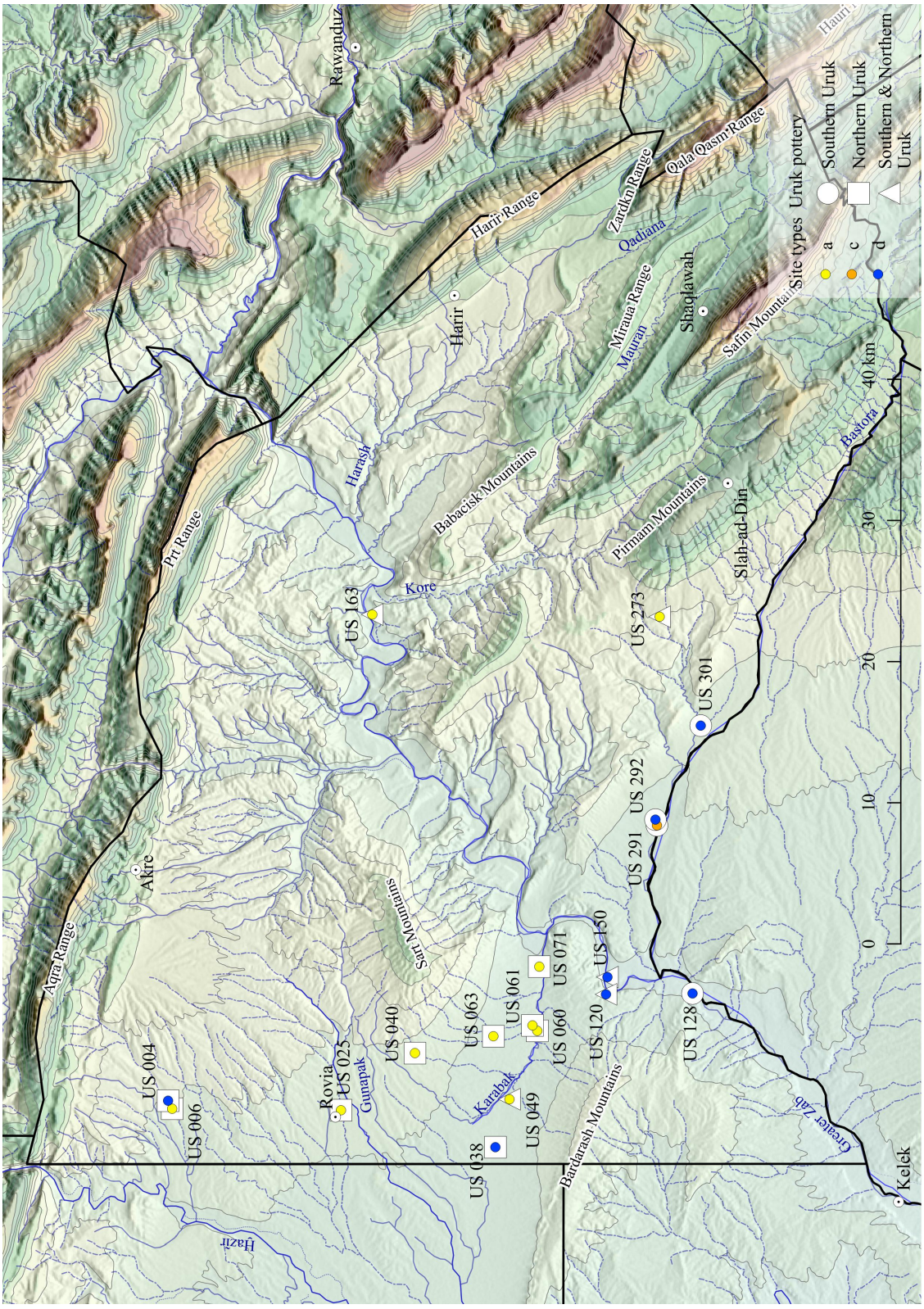

Fig. 17. LC3–5-period occupation in the UGZAR area (map: J. Mardas)

Two other sites were US120 and US150 located on the Greater Zab, a few kilometers north of the confluence of the Bastora and the Zab. Both of them seem to have been occupied through most of the LC3–5 period and then abandoned at the end of this period. These two sites yielded plenty of southern Uruk pottery, while northern Uruk types constituted a minority, present mainly on US120. Site US120 was located on a 75-m-high cliff above the Greater Zab, on its western bank. A narrow, steep path led from the site to the riverbed. Site US150 lay on the opposite bank, on a low and wide terrace of the river. People living in both settlements could see each other easily as the sites are only 1.2 km apart. The artifacts found at US150 and US120 are exceptionally rich in comparison to the southern material from the other sites in the UGZAR region. Both sites yielded clay cones (they have not occurred on any other site in the UGZAR area). Ceramic cones[104] were an element of wall decoration on public buildings, as proven by the excavations at Uruk-Warka and Uruk colonies at Habuba Kabira, Jebel Aruda, Hassek Höyük (Stein 2001: 287–288), and also at Tell Brak (Mallowan 1947: 32, 93–95, Pls 3–4). US150 also yielded a retouched obsidian chip and a fragment of a clay sickle. Clay sickles of the same type have been found at Hacınebi and Abu Salabikh. This kind of tool was characteristic of southern Mesopotamia, where it was introduced in the Ubaid period and used through the Uruk and Jemdet Nasr periods (Benco 1992: 131). The use of clay sickles was clearly a culturally-determined feature because high-quality chert, flint, and metal were more easily available in northern Mesopotamia than in the south. The presence of clay sickles might be proof of the actual presence of people from southern Mesopotamia (Stein 2001: 289).

Two sites, US273 and US163, were a little "confined"; US163 was located on one of the Greater Zab's lower terraces, surrounded from the south-west and south-east by the highest terrace of the river, while US273 lay on a flat area surrounded by the higher and undulating areas of Pirmam and Bauakhalan mountains. The presence of southern Uruk sherds at site US163 confirms that, despite its isolated position, it had some relations with areas to the south. It also yielded a fragment of obsidian, but as the place seems to have been continuously occupied since the Halaf period, it could not be established to which of the occupation periods in evidence it belonged.

Most of the settlements were located in open and flat areas; the only two exceptions were US163 and US273 which lay in enclosed areas.

[104] Recently, clay cones have been found at Logardam and Girdi Qala (in the vicinity of Chamchamal) (Baldi, Naccaro 2015; Paladre et al. 2016).

The settlements were rather small villages located along rivers or streams; the exact area of the settlement is difficult to determine because some of these sites were multi-period settlements and, moreover, pottery collection areas covered only some parts of the sites, but they hardly extended over more than 2 ha.

LC3–5 was a very long period, lasting ca. 800 years. It is unlikely that all of these settlements were occupied during the whole period; some of them might have lasted longer, others were perhaps settled for a shorter period of time. Four sites, US291, US292, US309, and US162, might have been settled in the later phases of the period since they yielded only southern Uruk pottery. However, at Girdi Qala in the vicinity of Chamchamal (ca. 130 km to the south-east from US291 and US292), southern Uruk material appeared already in the LC2 period (Baldi 2015: 65–66).

According to Ławecka (in press), neither Terminal Uruk nor Transitional period pottery was identified within the UGZAR area, except perhaps in the case of US291/US292. Thus, the UGZAR area might have been temporarily abandoned at the turn of the 4th millennium BC. Also, none of the sites in the LoNAP area have so far yielded Terminal Uruk or Transitional pottery (Ławecka in press). Wilkinson and Tucker do not mention pottery from the transition of Late Uruk to the Ninevite 5 period either (Wilkinson, Tucker 1996: 49). The transitional phases were found at Muqable III during the joint German–Kurdish excavations directed by Peter Pfälzner (EHAS project) and Hasan Ahmad Qasim (Directorate of Antiquities Dohuk) (Pfälzner, Qasim 2017). Terminal Uruk pottery was found also at sites excavated within the Eski Mosul Dam Salvage Project: Tell Karrana 3, Tell Jessary, Tell Mohammed 'Arab, Tell Jikan (Arrivabeni in press). An abandonment of the UGZAR area or perhaps a return to nomadism are possible options, though quite radical, and for now, we can only guess what might have caused such changes.

Table 17. LC3–5-period occupation in the UGZAR area

a	*b*	*c*	*d*	Occ_{abc}	Occ_{d+}	Occ_{d-}	Occ_{d}	*Occ*	*Min. no of sites at period's*		*p**	E_{occ}	A_{Occ}	*Total no of sites*
									beginning	*end*				
10	0	1	7	5.5	0.88	4.12	2.5	8	10	1	800	0.01	0.021	18

Ten sites settled in the previous period, all located on the Navkur plain and in the Karabak valley, could have been abandoned sometime during or at the end of the period.

Seven settlements which had been established in LC3–5 were abandoned as well. Three of them had only southern material, so their existence must have been quite short; two others had both northern and southern material, and the remaining two represent local Uruk culture. Only one site, US291 located on the Bastora, had evidence of continuity towards Ninevite 5. In the context of the almost total abandonment of this area, the average number of contemporary settlements would be between 5 (or 6) and 8 (if sites of *type d* are included). The rate of abandonment is two times higher than the rate of establishment which shows the large changes occurring in the settlement (Table 17). Also, the average number of contemporaneously settled sites seems to be low in comparison with the total number of settlements according to Kintigh's formula. It should be also mentioned that 11 of these 18 LC3–5 settlements seem to have been reoccupied in Ninevite 5.

Southern Uruk vs. northern Uruk

Southern Uruk pottery in the UGZAR area occurred mainly in the southern part of the area along the Bastora and in the vicinity of the confluence of the Bastora and the Greater Zab. Two more sites, US273 and US163, were located in the eastern part of the UGZAR area at some distance from the Bastora, and one more lay along the Karabak stream. There is a difference between the eastern and western parts of the UGZAR area (Table 18). In the western part, only three sites with southern Uruk potsherds were found: US049 (on the Navkur plain), US128, and US120 (both located on the western bank of the Greater Zab; US128 to the south of the confluence of the Grater Zab and the Bastora, and US120 to the north). Two of them, US049 and US120, yielded only one potsherd each. At US120, southern Uruk potsherds were quite numerous, reaching 35 pieces. In total, there were 37 sherds of southern Uruk pottery in the UGZAR area to the west of the Greater Zab. Southern Uruk sherds were much more numerous in the area to the east of the Greater Zab; there were 154 potsherds at six sites, only one of which (US301) yielded just one sherd. In most of the cases in the UGZAR area, southern Uruk material coexisted with the northern Uruk one. Sites on which only southern Uruk potsherds occurred were located exclusively along the Bastora and on the western bank of the Greater Zab to the north of the confluence of the Bastora and the Greater Zab.

In the Tell Leilan area, there were five (or seven) sites with southern Uruk material (Brustolon, Rova 2007: 32), while in the area of Tell Hamoukar five sites with southern Uruk assemblage were recorded (Ur 2010: 100).

In the LoNAP area, there were only ten sites with southern Uruk pottery, four in the Navkur plain (two located to the south-west of Rovia, two along the Gomel stream), four to the south of Ba'adreh, one along the Dohuk stream to the south-west of Dohuk, and one to the north-west of Dohuk (Iamoni 2017). However, the number of identified southern Uruk potsherds at these sites was very low; in total, there were only 19 potsherds (Iamoni 2017). This contrasts with the results from the UGZAR area, especially in its eastern part.

Table 18. Number of southern Uruk potsherds at the sites in the UGZAR area

Site	Placement in respect of the Greater Zab river	No of sherds
US049	west	1
US120	west	35
US128	west	1
US150	east	87
US163	east	18
US273	east	21
US291 & US292	east	27
US301	east	1

In the area investigated by the EHAS, only five sites with southern Uruk pottery have been found so far. Three of them were located to the north-west of Dohuk, and two others lay along the Khabur river; all of them have also yielded local material (Sconzo 2017a).

Wilkinson and Tucker (1995: Table 10) mention 26 sites with potsherds of southern Uruk type (ten of them yielded only one potsherd). Only eight of them had potsherds also from the Ninevite 5 period. Many of the sites were located in the vicinity of Tell al-Hawa. A large number of southern Uruk settlements within this region might suggest that the southern Mesopotamian influences were quite significant in the Tell al-Hawa region. Wilkinson and Tucker (1995: 45) mention also that "there is a tendency for sites with

southern Uruk-related pottery to be clustered, mainly in the vicinity of hollow way routes."

It might be significant that southern Uruk material occurred quite often with the local northern Uruk one. In the area of the UGZAR, five settlements had both types, in contrast to four sites which yielded only southern potsherds. In the studied part of the EPAS region, there were 16 settlements with northern and southern material and 7 with only the southern type (Ur 2017); in the EHAS region, 6 sites had both kinds of material, and there is no mention of sites having only southern pottery (Sconzo 2017a). In the LoNAP area, there were only 10 sites with southern Uruk pottery, and the total number of potsherds was very low—only 19 fragments (it is not mentioned whether they occurred together with local material or separately) (Iamoni 2017). It cannot be said that southern Uruk material signifies the presence of the Southerners, except perhaps for sites US120 and US150 where clay cones and a clay sickle have been found. As has been mentioned before, these items are considered to be indicators of the presence of the Southerners. US120 and US150 had mostly southern Uruk pottery; at US150, there were only two local sherds, and at US120—12 sherds. In the case of four exclusively southern Uruk sites, US128, US291, US292, and US301, it is difficult to determine whether the presence of pottery means that people from the south actually lived there or not. It would be very risky especially in the case of US128 and US301, both of which have yielded only one potsherd.

The very low number of settlements with southern Uruk material in the LoNAP area cannot be explained by the gradual decrease in the number of southern Uruk sites towards the north since in Wilkinson and Tucker's survey the number of southern Uruk sites was quite high. It might have been connected with trade/exchange routes, which could also explain the distribution of southern Uruk sites in the UGZAR area. Routes leading from the south to the north might have been the most important; Al-Soof (1965) mentions five sites with Uruk pottery from the area of Rawanduz,[105] while for the regions located to the

[105] One of them is Girdi Rubiya located in the vicinity of the Diyana village (shown on a map in the *Atlas of Archaeological Sites in Iraq* 1976). The other four sites were difficult to locate since they are not marked on the maps in the *Atlas*. According to the *Archaeological Sites of Iraq* (1970), Qal'at Sweeri is related to the Shiwarash village located most probably close to the Iraq–Iran border, and Qaberstan Walzeh is related to the Walza village which is also near the Iraq–Iran border. Qaber Maznan and Zawi Badrawa are even more difficult to locate since I could not find the related villages (they are probably not marked) on old maps (A.M.S. K501 (G.S.G.S 3919) published by the Directorate of Military Survey British Army 1942). However, they must have been somewhere in the vicinity of Qal'at Sweeri and Qaberstan Walzeh, since their numbers in the *Archaeological Sites of Iraq* are in close range (Qal'at Sweeri 641, Qaberstan Walzeh 646, Qaber Maznan 640, and Zawi Badrawa 636).

north of the LoNAP and EHAS areas, both Al-Soof (1965) and the *Archaeological Sites of Iraq* (Salman 1970) mention only one site (Khirbet Ben) with pottery from the Uruk period. Some of the communication routes drawn by Algaze (1993: Fig. 30) and also visible on old maps cross the UGZAR area (Fig. 18, 19). There are three routes leading from the Erbil plain to the north-east: the first cuts the Bastora, runs through the Babacisk mountains and further northwards to Rawanduz (route 43B, *Handbook of Mesopotamia* 1917, vol. III); the second passes through the Rania plain and then runs further to the east (routes 42, 40, and 41), and the third crosses the Bastora and leads towards Shaqlawah, then to Batas in the Harir plain and on to Rawanduz (route 43A). Finally, there is road 45B leading from Mosul, through Girdmamik where the Greater Zab was crossed by a ferry, then the route goes along the Bastora to the Rashwan village and turns north-east to Dere Birush and then through Babacisk to Rawanduz. Communication routes of central Kurdistan are also shown on the map (Fig. 15) published by Mason (1919), featuring one leading from Erbil to Dere and then to Rawanduz. The location of sites with southern Uruk pottery in the UGZAR area seems to correspond quite well to some of these tracks; however, we can only speculate whether they were used during the Uruk period or not. Sites US120 and US150 were located in the vicinity of the confluence of the Bastora and the Greater Zab where route 45B crossed the Greater Zab. There were sites with southern Uruk material along the Bastora; site US292 yielded an abundant collection of southern sherds. The Bastora was crossed by route 43B and older tracks leading from the Erbil plain to the north. Site US273 was located on this old track leading to the Harir plain, but from this point, one could also follow the Kore valley and reach US163, a multi-period site on the eastern bank of the Greater Zab. According to Koliński (personal communication), the route along the Kore valley to the north and then to the Harir plain was easier than the one through Diuin and Babacisk. It is difficult to prove that these paths existed also in the Uruk period, but the presence of Uruk sites in the area of the UGZAR and Rawanduz might indicate that there was communication between these regions. In the case of the LoNAP and EHAS areas, it is possible that the routes leading to the northern regions were less popular; more important were the routes running to the north-west along the Tigris and across the regions of Tell ’Afar and Tell al-Hawa.

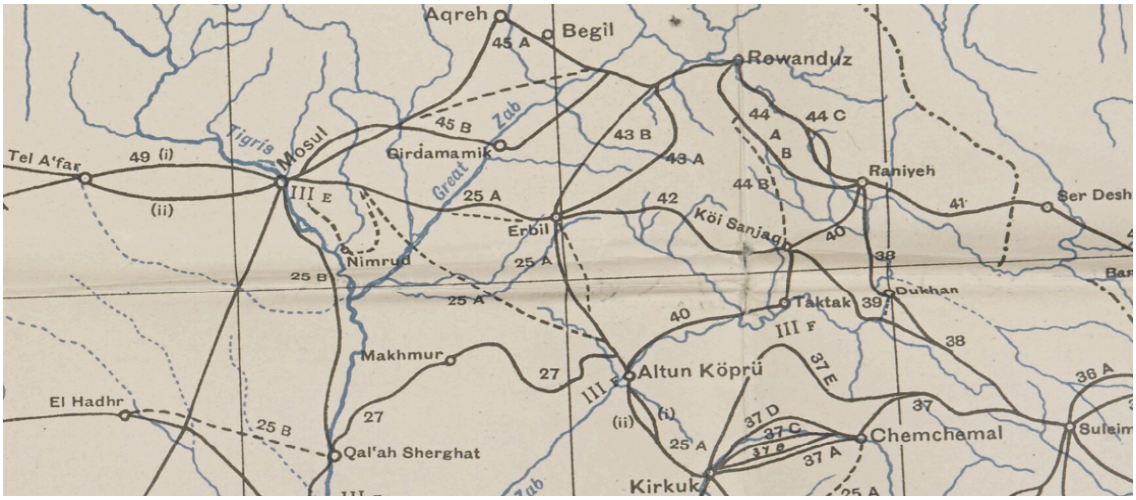

Fig. 18. Fragment of a map from the *Handbook of Mesopotamia* 1917, vol. III

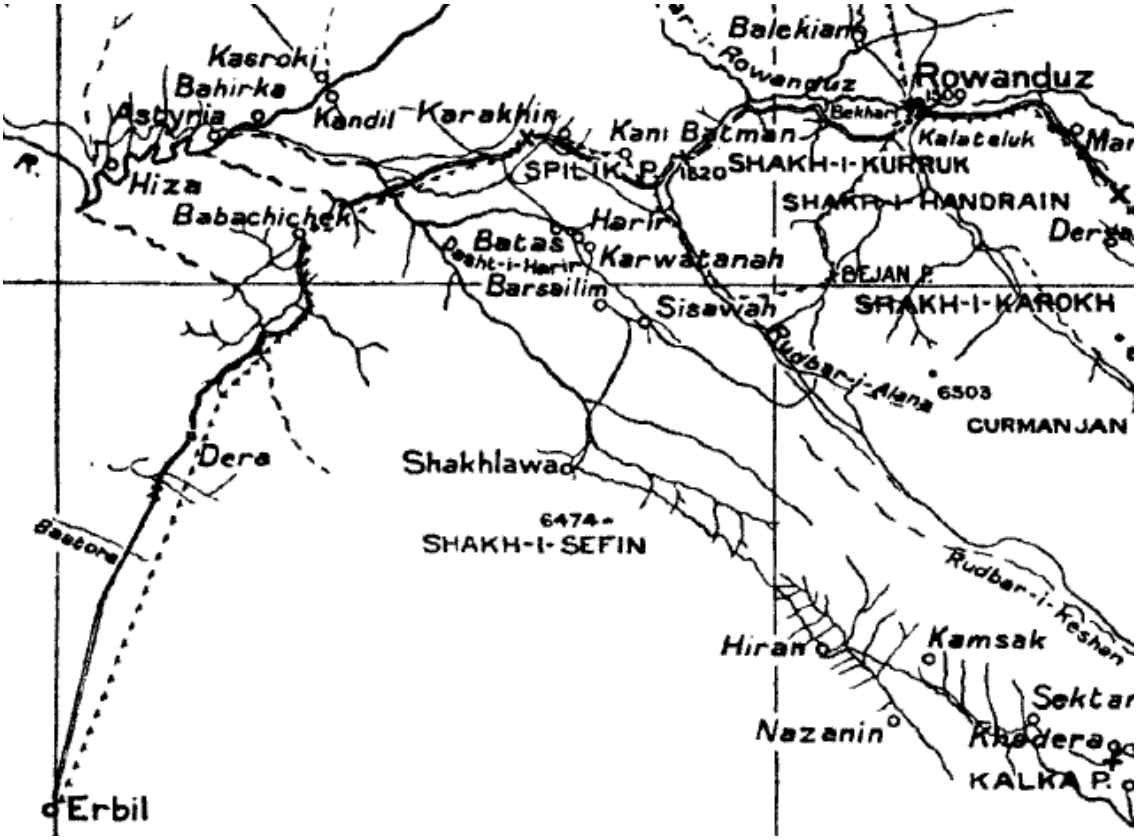

Fig. 19. Fragment of a map showing communication routes (Mason 1919)

Conclusions

Northern Mesopotamian sites of the LC3–5 period show signs of developed networks of administrative control, as well as evidence of specialization and social differentiation. In addition, some of the settlements reached large sizes. All of these elements contest the popular image of southern Mesopotamia as the source of all

innovations. It is clear that urbanization had begun to develop in northern Mesopotamia even before the intensification of contacts with the south and the so-called Uruk expansion. It is remarkable that manufacturing, religious, and administrative activities intensified even on smaller settlements like Tepe Gawra. Specialized buildings such as temples, craft, or public buildings could have played an administrative role as well. In the levels X to VIII, the majority of seals have been found in temples which means that they became central institutions (Rothman 2001: 389).

In comparison to the regions of the LoNAP, EPAS, and even Tell Hamoukar (which is quite limited), the number of LC3–5 settlements in the UGZAR area is quite low. This contrasts strongly especially with the results of the LoNAP. Based on the recent results of Jason Ur's survey, a very high number of LC3–5 settlements might be expected also in the EPAS region. When the two periods (LC1–2 and LC3–5) in the UGZAR area are compared to the Tell al-Hawa Uruk period, the number of settlements in the UGZAR area is much lower (62 vs. 33 sites). Communication routes seem to have played an important role in the localization of settlements. The regions of Tell Hamoukar and Tell al-Hawa were crossed by tracks leading to Anatolia, and in the UGZAR area, the location of sites with abundant southern Uruk material seems to correspond with the routes leading towards the north. However, the lack of settlements in the Harir plain is hard to explain, especially since there were four settlements in the LC1–2 period and southern pottery was identified on a few sites in the area of Rawanduz. Perhaps the lack of evidence for the existence of LC3–5 settlement on the Harir plain is somehow related to the lack of settlement representing the transitional phase between the Uruk and Ninevite 5 periods in the whole of the UGZAR region (and maybe also the LoNAP area).

One of the factors influencing the appearance of large centers seems to be their relation to the most important communication routes. Tell al-Hawa, Tell Hamoukar, and Tell Brak lie on old tracks leading to Anatolia. Conversely, the UGZAR area seems quite peripheral. As all settlements here are of moderate size, no cities or even larger local centers should be expected. The region of the UGZAR could have displayed a more heterarchical structure. Another important feature of the UGZAR area seems to be the disproportion in the quantity of southern Uruk pottery between the areas located to the west and east of the Greater Zab. Southern Uruk pottery is numerous at the sites located to the east of the Greater Zab, while in the area to the west of the river, it is much less abundant (and even scarce in the case of the LoNAP area). The situation is opposite in the case of local Uruk pottery. According to Koliński (personal communication), the

difference in the quantity of southern Uruk material justifies the assumption that the Uruk expansion did not reach the areas located to the west of the Greater Zab.

On the basis of the pottery evidence, it can be said that the end of the Uruk period was related to some significant changes within the settlement patterns. The regions of Tell Leilan, Tell Hamoukar, Tell al-Hawa, the LoNAP, and the UGZAR lack entirely evidence of the settlement representing the transitional phase between the Uruk and Ninevite 5 periods. Thus, the area might have experienced abandonment during this transitional period, or perhaps its inhabitants switched to pastoralism.

Period 6 – Ninevite 5

Ninevite 5 pottery is dated from the beginning to the middle of the 3rd millennium BC (for the chronological frameworks of Ninevite 5 pottery, see Rova 2003). This pottery style was noticed for the first time during Campbell-Thompson's excavations at Nineveh in 1931–1932. Mallowan, who participated in the excavations, opened a 27-m-deep sounding in the center of Kuyunjik, called the Prehistoric Pit,[106] which yielded a pottery sequence for the early cultures of northern Mesopotamia. The fifth level in this pit contained Ninevite 5 pottery, which was in use after the end of the Uruk period and before the late Early Dynastic period (Thompson, Mallowan 1933: 134). The excavations undertaken as part of the Eski Mosul Dam Salvage Project shed new light on the development of Ninevite 5 pottery, yielding evidence which indicated that Ninevite 5 pottery did not appear in northern Mesopotamia in its developed form but gradually evolved from the earlier pottery style after the end of the Uruk period. Within the framework of the Associated Regional Chronologies for the Ancient Near East (ARCANE) project, the ceramic assemblages from the 3rd millennium BC northern Mesopotamia were divided into several phases. For the Turkish part of the Tigris valley, the region of the Eski Mosul Dam, and the area to the east of the Tigris river, they are called Early Tigridian (ETG), and for the Jazira, these phases are named Early Jazira (EJZ, see Rova 2011).[107] Phase ETG 1 (Terminal Uruk) and ETG 2 (Transitional/Intermediate) are post-LC5 ceramics; during that time, Late Uruk pottery disappears, and the new simple painted geometric decoration appears (Ławecka in press). In the short sub-phase ETG 2b, also incised decoration on fine vessels starts to appear

[106] The Prehistoric Pit at Nineveh was 27.5 m deep, and its dimensions at the top were 65' x 50' (Thompson, Mallowan 1933: 127).

[107] The transition from the Late Uruk to the Ninevite 5 period is quite problematic, as has already been mentioned in the chapter on the settlement distribution in the LC3–5 period. Terminal Uruk and Transitional pottery was found at a small number of sites, and it came only from the excavations. The surveys did not report any sherds of this type. The lack of Terminal Uruk and Transitional pottery might indicate a temporary abandonment of the investigated areas or a change in the lifestyle of the local communities, for example, a switch to nomadism. However, considering the fact that in some areas of northern Mesopotamia Ninevite 5 settlements were not excavated, and there is a lack of stratified pottery data, it cannot be excluded that those areas were developing under some local trajectories during the transitional period between Late Uruk and Ninevite 5; it is a possible scenario, but for now, it can be only hypothesized. The lack of information about transitional pottery from Ibrahim's survey in the region of Tell 'Afar and Wilkinson and Tucker's survey in the region of Tell al-Hawa makes the considerations about the transition from Late Uruk to Ninevite 5 in this area very problematic. Thus, again, two possible situations will be presented, one assuming the continuity in these areas from Late Uruk to Ninevite 5, and the second assuming the temporary abandonment of the settlements during the transitional phase.

(Arrivabeni in press). These phases are mainly represented on sites known from the Eski Mosul Dam Salvage Project: Tell Karrana 3, Khirbet Hatara, Tell Jessary, Tell Mohammed 'Arab, Tell Jigan, Tell Thuwaij, Tell Fisna. Pottery from phases ETG 1 and ETG 2 has been found also at Nineveh and Telul eth-Thalathat. The following phases ETG 3 and ETG 4 constitute the "classic" Ninevite 5 pottery. The ETG 3 phase is characterized by the presence of painted, incised, and ribbed decoration. In ETG 4, the painted motives disappear, the ribbed decoration is less common, and the Excised Ninevite 5 decoration appears for the first time. The Incised decoration is still in use, but the designs are more elaborate and occur together with the Excised decoration (Arrivabeni in press). The remaining phases (ETG 5–9) refer to the mid and second half of the 3rd millennium BC after the disappearance of Ninevite 5 pottery (Arrivabeni in press).

Ninevite 5 pottery is characteristic mainly of north-eastern Syria (the Upper Khabur triangle) and northern Iraq, but Ninevite 5 incised/excised pottery was discovered also in south-eastern Turkey (Rova 1988: Pl. II – Map II; Rova 2003). The core area of Ninevite 5 seems to have been located in modern Iraqi Kurdistan, although some transitional Late Uruk/Ninevite 5 materials are known also from Syrian sites (Tell Brak) (Ławecka 2016: 181). Arrivabeni divides the area of Ninevite 5 occurrence into three sub-regions: Tigridian Core, Central Tigris, and Turkish Upper Tigris. The Tigridian Core is an area "from the confluence of Tigris with the Greater Zab to just beyond the Turkish–Iraqi border" (Arrivabeni in press). The Tigridian Core consists of 20 sites. The Central Tigris sub-region covers the area of Assur, Tell Neml, and Yorgan Tepe. The Turkish Upper Tigris sub-region consists of eight sites "located in the north-westernmost corner of Ilisu Dam Salvage area" (Arrivabeni in press). The Tigridian Core area is related to the earliest phases, ETG 1 and ETG 2, and also to the later, "classic" Ninevite 5 pottery (Arrivabeni in press). According to Arrivabeni, the two sub-regions, the Central Tigris and the Turkish Upper Tigris, "seem to share many characteristics with the neighboring regions: the Central Tigris sub-region is linked to the Central and (less so) to the Southern Mesopotamian culture, while the Turkish Upper Tigris sub-region shows strong similarities with the Jezirah, and to a limited extent also with the East Anatolian Middle Euphrates regions" (Arrivabeni in press). In the Middle Khabur valley, there are some settlements which are dated to the first half of the 3rd millennium BC, e.g., Tell al-Raqā'i (Schwartz, Curvers 1992), Tell 'Atij (Fortin, Cooper 1994; Fortin, Schwartz 2003). However, Ninevite 5 pottery found at these sites is usually late, and there are scarce examples of potsherds with painted decoration which are rather local imitations

of the Ninevite 5 style (Akkermans, Schwartz 2003: 214). Having weaker links with the Ninevite 5 settlements in northern Iraq, these sites are not included in this chapter.

After the end of the Uruk period, at the beginning of the 3rd millennium BC, the development of southern and northern Mesopotamia moved along different trajectories. In the south, urban sites continued their existence while northern Mesopotamia and south-eastern Anatolia seem to have entered a period of ruralization (Algaze 2008: 121; Akkermans, Schwartz 2003: 211). The beginning of the 3rd millennium BC is marked by a settlement crisis observable in most of the regions of northern Mesopotamia. Areas around Tell al-Hawa (Wilkinson, Tucker 1995), Tell Leilan (Stein, Wattenmaker 2003), and Tell Hamoukar (Ur 2010) all experienced a reduction of settlement. These changes in the settlement involved most probably "increased emphasis on pastoral nomadism" (Matthews 2003b: 133). However, not all small Ninevite 5 settlements were simple villages, as there is some evidence of economic specialization, some administrative practices indicated by the presence of seals and sealings, and of social stratification visible in mortuary customs (Akkermanns, Schwartz 2003: 223). The power was probably held by the elites who were trying to mobilize and control agricultural resources (Schwartz 2003: 587).

It is possible that Nineveh was one of the largest settlements during the Ninevite 5 period. The site reached over 40 ha and consisted not only of an Upper Town (Tell Kuyunjik) but also of a Lower Town (Stronach 1994: 92–93). Clay sealings and seals found at Nineveh were the most numerous among the Ninevite 5 sites; this indicates that a large-scale administration functioned at the site. Moreover, Nineveh could have also been a religious center in this period, since the large room credited originally to Šamši-Adad I is now considered to be a Ninevite 5 temple (Reade 2005: 335; Rova 2017: 114). The large size of the site and the abundance of sealings indicate that Nineveh was a local center (Collon 2003; Rova 2017: 117). Plenty of clay sealings have been found also in a temple (sector HS4, level 5) at Tell Brak (Matthews 1996: 71–73; Matthews 2003b: 109, see also below). Tell al-Hawa, although reduced in size, was still a quite large settlement during Ninevite 5 (Ball, Tucker, Wilkinson 1989: 34). Tell Arbid, located in the Khabur triangle, could have been another important Ninevite 5 site. The excavations conducted by Piotr Bieliński yielded remains of a temple and a residential district (Bieliński 2010; Smogorzewska 2018).

At the beginning of the 3rd millennium BC, not only did the size of sites decrease but also buildings became smaller. The architecture of the Ninevite 5 period did not

show any repeated regularities in architectural form; there existed various types of buildings made of mud-bricks (Roaf 2003: 321). The tripartite ground plan of the Uruk period was no longer used. Houses were less regular and smaller, and temples were much simpler than before, consisting of a single room with an altar built of mud-brick. It should be kept in mind that, firstly, the architectural evidence is limited, and the remains of unearthed structures are in most cases fragmentary; secondly, "the large exposures of Ninevite 5 architecture have been on smaller sites in which more prestigious buildings are unlikely to have been built, while excavations on larger and more important sites have been restricted to small soundings" (Roaf 2003: 311).

Although it seems that the urban network formed during the Uruk period had collapsed, the end of the Ninevite 5 period is marked by the rebirth of urbanization and by the formation of large settlements, at least in some areas. For example, on the plain of Tell 'Afar, two sites, Karatepe and Beloyz, seem to have grown significantly in Ninevite 5, becoming larger than ever before (Reade 1968: 236). Also, the region of Tell Leilan seems to have developed quite well (see Ristvet 2005).

Settlement structures

The information about architecture is scarce due to the limited exploration of the sites of this period. It is also not certain whether one-room buildings interpreted as shrines or temples are typical of Ninevite 5 generally or are they only a feature characteristic of the Khabur region (Ławecka 2016: 182). The data regarding the architecture in the region of northern Iraq come mainly from the settlements excavated as a part of the salvage project carried out in the region of the Eski Mosul Dam and also from a few other sites like Telul eth-Thalathat. For this reason, there will be some references to sites located in the eastern part of the Upper Khabur basin.

A characteristic feature of Ninevite 5 sites was the presence of structures used for the storage and processing of grain, such as *siloi*, grill structures, and large ovens (used probably for roasting and drying grains). Structures in the form of parallel walls, sometimes called grill structures or granary racks, might have formed a part of platforms with air ventilation beneath them (Badra 2015). Similar structures were also found at other sites from various periods, e.g., Umm Dabaghiyah, Yarim Tepe I, Jarmo, Tell Karrana 3. The presence of cereal seeds between the parallel walls indicates that these structures could have been used for cereals but in some cases, for example at Late Uruk

Tell Karrana 3, bones of domesticated and wild animals have also been found which in turn may suggest that the structures were used for the processing of pieces of meat (Wilhelm, Zaccagnini 1993: 29–32). Tell No. V at Telul eth-Thalathat yielded a large, slightly trapezoidal granary measuring ca. 18 x 6 m. The structure was quite elaborate, and the outer walls had buttresses. There was an entrance on each of the longer walls; they led to two very small rooms, which were most probably used for different purposes. Entrances to the other rooms must have been placed higher, at least 1 m above the floor, or perhaps the rooms were accessible through the roof (Fukai, Horiuchi, Matsutani 1974: 18, 24). The granary was composed of two structures, the lower and the upper one. The lower structure consisted of parallel walls (60–70 cm apart) which constituted the base for the upper structure. The upper face of the sleeper walls of the lower structure bore impression marks of round stalks, probably of reed.[108] The upper structure was composed of ten rooms (Fukai, Horiuchi, Matsutani 1974: 19–22). The granary also yielded a few cylinder seals (Fukai, Horiuchi, Matsutani 1974: xxix, 51–52). That the structure (or at least some parts of it) was probably used as a granary is indicated by carbonized grain found in rooms R16-b and R1 (the layer of carbonized grain in R1 was ca. 60 cm thick) (Fukai, Horiuchi, Matsutani 1974: 10–11). Some of the rooms of the structure might have had a different function since other artifacts were found inside, such as pottery vessels (Fukai, Horiuchi, Matsutani 1974: 10–11), an obsidian blade and a sickle blade (Fukai, Horiuchi, Matsutani 1974: 47, 74), four biconical spindle whorls, a "hexagonal ornament," and clay discs (Fukai, Horiuchi, Matsutani 1974: 53–55). In the vicinity of the granary, there was also a round structure R-3, ca. 5.5 m in diameter (Fukai, Horiuchi, Matsutani 1974: 25), surrounded by a 1.2-m-thick wall made of bricks with a kiln in the center (Fukai, Horiuchi, Matsutani 1974: 12, 26). Structure R-3 also yielded six large jars placed along the inner face of the walls (Fukai, Horiuchi, Matsutani 1974: 14).

Facilities used most probably for grain processing were found at Tell Hamoukar and Tell Arbid. Two areas (H and E) excavated on Tell Hamoukar[109] yielded remains of three large building units. Some of the rooms were used for the storage and processing of food, as indicated by the presence of ovens and storage jars (Reichel 2011: 58). Large ovens and smaller *tannurs* surrounded a courtyard in area H, which, according to

[108] According to the excavators, reeds might have been used because of the lack of wood, but it is also possible that they were used to protect the grain from rats. Local people said that modern granaries are made in a similar way because rats do not like reeds (Fukai, Horiuchi, Matsutani 1974: 22).
[109] The Ninevite 5 period in the Lower Town of Tell Hamoukar is dated to its late phase (Grossman 2013: 128–129).

Grossman, might have been used as a brewery. In fact, burnt grains were found in these ovens; however, it is unknown whether it was sprouted barley (Grossman 2013: 118–121, 129–130, Fig. 5.19). Similar installations were found in Tell Arbid. Sector SD at Tell Arbid yielded plenty of hearths and ovens of the round and oval kind. Some of the large ovens were concentrated in the northern part of the sector; there is no certainty about their function, but it is probable that they were used for roasting or drying grain (Ławecka 2009: 562–569).

Granaries from the Ninevite 5 period are sometimes interpreted as the elites' attempts to control the surpluses. The presence of structures used for grain storage might be related to the increasing economic power of the elites. Large quantities of goods require, in turn, centralized administration, of whose activity the presence of seals and seal impressions might be an indication. Schwartz writes that the centralized storage and administrative practices may indicate that the political complexity of Ninevite 5 was similar to chiefdoms (Schwartz 1987: 94–98). Yoffee (1993a) has a different opinion; he points out that chiefdoms are not just a stage before states but rather an alternative system and that past social organizations should be understood on their own terms (Yoffee 1993a; Akkermans, Schwartz 2003: 224).

Examples of residential areas come from a few sites. The discovered structures consist of one or a few rectangular rooms and do not have a regular ground plan. Kutan yielded remains of buildings; however, the excavated area was limited, and none of the buildings was cleared entirely. Walls built of mud-bricks were coated with mud plaster; in some places, they were strengthened with stones. Some of the walls were very thick, up to 1.5 m. These buildings consisted of a large rectangular room with a fireplace and an adjoining bench in the center of the room (Forest 1987: 85–86; Bachelot 2003: 153). In the words of the excavators: "such rooms don't partake of simple schemes (i.e., tripartite one) and we are clearly dealing with large and complex compounds" (Forest 1987: 85–86). Simple houses, usually consisting of a single room (sometimes two rooms) with a central hearth and a platform, were found at Tell Mohammed 'Arab. Some of the buildings had buttressed walls (Roaf 2003: 317–319). At Tell Arbid, plenty of rooms with hearths and storage bins were found in sector D. One of the rooms was accessed from the roof and was probably used as a silo (Smogorzewska 2018). There must also have been a pottery workshop in the area since deformed, overfired, and warped vessels have been found (Smogorzewska 2004: 69–71).

There are no examples of large architecture, and the religious buildings are scarce and less spectacular than in the previous period. Temples or small shrines were found at Tell Arbid (Ławecka 2006: 71–73) and Tell Brak (Matthews 1996: 71–73; Matthews 2003b: 109–113). At Tell Brak, the Proto-Ninevite and Ninevite 5 settlement was located only on the high mound (Ur, Karsgaard, Oates 2011: 9). A temple consisting of a single rectangular room with a free-standing altar located towards the western end of the room was discovered in trench HS4:2, in phase 5. Several hundred clay sealings were found around the altar and in the fill above the floor,[110] indicating that some of the temples were most probably involved in administrative activities. The temple was later abandoned and filled in, and a new one was built on top of it (Matthews 1996: 71–73; Matthews 2003b: 109–113). In the lowest levels, another impressive building of a non-domestic function, perhaps also a temple, was encountered (Matthews 2003b: 104–106). The temple excavated at Tell Arbid resembles the one from Tell Brak. In front of the building, a large mud-brick terrace composed of three high steps was erected. The excavators suggest that the terrace was constructed to make the temple "look as if it had been erected higher than it really was" (Bieliński 2013: 361). According to Bieliński, the trial pits dug inside the cella of the temple suggest the existence of a series of sanctuaries built one upon the other (Bieliński 2013: 370).

Sites with Ninevite 5 pottery located in northern Iraq yielded very scarce architectural remains or none at all. At Grai Resh, the upper Ninevite 5 levels consisted of some walls and foundations of a small building (Lloyd 1940: 13). Tell Jigan has yielded some walls, but there is no certainty as to their character (Fujii 1987: 42). At Siyana Ulya, the only significant structure was a small mud-brick room; some rough stone and mud-brick surfaces and two walls made of stone were excavated as well (Ball, Gill 2003: 25, Ball, Wilkinson 2003: 337–338). Scarce remains were found also at Tell Gir Matbakh, although there were a few (4 or 5) building phases and some walls of buildings were visible in section. There were also traces of a wall in the form of a linear strip of plastering; it could have been a "negative" of a wall. Two other walls composed of two rows of mud-bricks were found as well (Campbell 2003: 136–137; Ball, Wilkinson 2003: 338–339). At Tell Fisna, at the top of the mound, there was a large platform constructed of mud-bricks (Fujii 1987: 45). At Tepe Gawra, in stratum VII dated to the times of Ninevite 5 pottery (Dunham 1983: 35), there were just fragmentary walls and some rooms

[110] The fill above the floor yielded 224 sealings with seal impressions and 138 pieces without surviving seal impression. What is important, only five cylinder seals were impressed on them (Matthews 1995: 91–93).

with a very confusing and irregular plan (Speiser 1935: 21). At Tell Shelgiyya and Tell Abu Dhahir, no structural remains of the period under discussion have been found (Ball, Pagan 2003: 155; Ball, Wilkinson 2003: 339–340; Simpson 2007: 56–57; Ball 2003: 12).

Procurement of raw materials and contacts with other regions

The variety and quantity of materials imported from distant regions seem to be more modest than in the previous periods. The quantity of obsidian decreased at Tell Brak[111] and also at Tell Karrana 3 (obsidian was generally rare at the site, constituting only 2.9% of total lithic material; however, a decrease in Ninevite 5 compared to the previous period is visible, Brautlecht 1993: 150, 165, 193). At Tepe Gawra, 164 obsidian items[112] are listed for stratum VII, but their origin is problematic[113] (Speiser 1935: 84). At Ninevite 5 sites, there are generally not many objects made of precious stones and metals. In one of the graves at Tell Jigan, lapis lazuli, carnelian, and rock crystal were found (Ii 2003: 43). A few objects made of imported materials were found at Telul eth-Thalathat: one bead of agate and two of copper (Fukai, Horiuchi, Matsutani 1974: 51–53).

Copper and copper/bronze objects were also encountered in the settlements, although they were not frequent. Objects such as a copper cylinder seal, copper/bronze pins, needles, a copper/bronze toggle-pin, chisels, rings, daggers, button-shaped copper objects, and others were found at Tell Karrana 3 (Stein 1993a: 137), Telul eth-Thalathat (Fukai, Horiuchi, Matsutani 1974: 54), Tepe Gawra (Speiser 1935: 103, 114–115),[114] Tell Mohammed 'Arab (Roaf 1984: 153), Tell Billa (Muhly, Stech 2003: 419), Nineveh (Thompson, Mallowan 1933: 145–146), Tell Leilan (Muhly, Stech 2003: 420), and at Chagar Bazar (Mallowan 1936: 26–27).

Some of the materials used were obtained from the neighboring areas; for instance, bitumen present at Tell Karrana 3 could have been brought either from the district of Zakho or from the area of Kirkuk or Qayyarah and Qal'at Shergat (Brautlecht 1993: 150).

[111] However, it rose again in the succeeding period, cf. Conolly 2003: 373, Fig. 9.17.
[112] The number almost equals the one in stratum VIII (LC 3). The most noticeable difference is in the character of the items; in stratum VIII, obsidian blades dominated, and in stratum VII, their number was reduced, while the number of arrowheads increased (Speiser 1935: 84). The number of obsidian items decreases dramatically after stratum VI (Speiser 1935: 84).
[113] In the case of Tepe Gawra, it must be pointed out that level VII is problematic because it is highly disturbed by later constructions, and thus the artifacts found in level VII might not originate from this level (Muhly, Stech 2003: 418).
[114] According to Speiser, level VII at Tepe Gawra yielded 42 objects made of copper, mainly needles (19 items), and also chisels (4), knives and daggers (3), a nail with a flat head (1), hooks (2), pins (4), rings (6), tweezers (1), an animal figurine of a snake (1) (Speiser 1935: 103, 114–115).

Pestles and querns discovered at Telul eth-Thalathat were made of sandstone, basalt, limestone, conglomerate, and marl[115] (Fukai, Horiuchi, Matsutani 1974: 48–49). Two cylinder seals made of alabaster (brought perhaps from the Mosul area, cf. Moorey 1994: 21) were found as well (Fukai, Horiuchi, Matsutani 1974: 51). At Tepe Gawra, eleven seals were found: five cylinder seals and six stamp seals. Four of the cylinder seals were made of stone: grey limestone, marble, alabaster, and black diorite respectively; the fifth was made of bone. One of the stamp seals was made of steatite; others were made of ivory, bone, and terracotta (Speiser 1935: 121–127).

The small number of precious materials is not really surprising regarding the fact that, firstly, most of the sites were small and of rural character and, secondly, the graves were rather poorly equipped (perhaps with the exception of an adult grave at Tell Rijim, see below). Nevertheless, the presence of obsidian, copper/bronze, and some precious stones like lapis lazuli, carnelian, and turquoise indicates that some contacts with distant regions were maintained.[116]

Food sources – land use

The information regarding faunal remains from the Ninevite 5 period comes from the region of present-day northern Syria. Except Tell Karrana 3, there are no archaeozoological data for this period in northern Iraq. The proportions of the three main species of domesticated animals, i.e., sheep/goat, pig, and cattle, varied from site to site. A typical feature is that the importance of the pig increased during Ninevite 5, quite significantly at some sites, and only slightly at others. It is interesting that the pig was quite common at some early 3rd millennium BC sites in northern Syria, especially in the Upper Khabur basin, while in the later 3rd millennium the ratio of pigs in north-western Syria decreased in general, but remained high in the Upper Khabur basin (Price, Grossman, Paulette 2017: 51, 53). The high proportion of pigs is visible for example at Tell Hamoukar and Tell Arbid. At Hamoukar, sheep/goats and pigs were the most numerous and almost equally common. The ratio of cattle and equids was, in turn, low

[115] Sandstone and limestone occur in the Amanus-Taurus-Zagros mountains (Moorey 1994: 21). Basalt occurs in the neighborhood of Tepe Gawra (Moorey 1994: 21–22) and also in the area of Hassake, in the Kaukab volcano (Kepinski 2011: 57). Marl occurs in the area of Mosul, Sulaimaniyah, and Raniyah; conglomerate occurs in the Mosul region (Sissakian et al. 2018: 44, Fig. 2; Mustafa, Merkel 2015: 2, Fig. 1; Karim, Khanqa 2016: Fig 1) and we often encountered it also in the UGZAR area.

[116] It is also possible that some of these items were inherited or simply found in the remains of previous settlements.

(Grossman 2013: 316). At Tell Arbid, pigs and sheep/goats also were the most frequently occurring species, while cattle constituted a minority. Quite common were also bones of equids,[117] as well as remains of mollusks (Piątkowska-Małecka, Smogorzewska 2010: 30–31; Piątkowska-Małecka, Smogorzewska 2013: 444). From Koliński's analysis of the proportions of animal remains during the 3rd millennium BC in northern Mesopotamia, it follows that there were three animal husbandry patterns related rather to cultural and ethnic preferences. The first pattern, the "Specialized Pattern," is characterized by the high percentage of sheep and goats, at least 75%. Cattle is also important, constituting 10–20% of the identified bones, but pigs are extremely rare or absent. The second pattern, the "Balanced Pattern," has more even proportions between animals; sheep and goats are important, forming 40–60% of animal remains, and pig bones are quite abundant as well, constituting between 10% of the assemblage in arid areas and even 65% in more humid areas. Cattle bones are less popular, forming 15% or less of the bone assemblage, the same as wild animals (Koliński 2012: 245–247). The third pattern, the "Hunting Pattern," occurs in the Hamrin region "where hunting of onager was traditionally an important source of meat" (Koliński 2012: 247).

At Tell Brak, the ratio of caprines to other animals such as pigs, cattle, and gazelles decreased in Ninevite 5, although caprines still constituted the majority (Dobney, Jaques, Van Neer 2003: 418). The number of bones belonging to pigs (about 10%) increased significantly compared to the previous period and kept growing also in the late 3rd millennium, reaching 45% (Dobney, Jaques, Van Neer 2003: 418). Similar proportions of pig remains occur at Tell Karrana 3 in the Ninevite 5 period, where they constitute about 20% of the determined animal bones (Boessneck, von den Driesch, Ziegler 1993: Tab. 1), and at Kutan, where domesticated goats and sheep were in the majority (43%), but pigs were also quite important (10%) (Bachelot 2003: 158; Forest 1987: 88).

In Ninevite 5 at Tell Brak, it is also visible that the number of gazelle bones increased significantly, and the bones belonging to donkey/horse/wild ass were more numerous as well (the number of donkey/horse/wild ass bones increased also in the succeeding periods) (Dobney, Jaques, van Neer 2003: 418).

The archaeobotanical data from Tell Brak show that the pattern of using plants was similar as in the previous period; however, in the succeeding period, the proportion of

[117] Equids could have been either wild or domesticated; as Koliński points out, "it is very difficult to determine if at that time [during the 3rd millennium – JM] they were domesticated animals (donkey, horse) or wild ones (wild donkey, onager, wild horse)" (Koliński 2012: 241).

barley increased significantly, and it became the dominant cereal (Colledge 2003: 394, Fig. 11.9). Remains of lentil and grass pea constituted the majority of legumes. Lentil dominated at first, but in the later period, the ratio was more equal (Colledge 2003: 401).

Burial customs

The burial data for Ninevite 5 is rather scarce, and there seem to be differences between regions. During the early 3rd millennium BC, cemeteries appeared again; they are known from Tell Mohammed 'Arab (Bolt, Green 2003) and Tell Rijim (Bieliński 2003). The cemetery at Tell Rijim was unfortunately largely disturbed by later Khabur activities, and only two graves remained intact (Bieliński 2003). The cemetery on Tell Mohammed 'Arab had various grave types, but the data is unpublished (except for the information contained in Bolt, Green 2003). Ninevite 5 burials were not separated according to sex or age; sometimes adults were even buried together with infants, for example at Tell Jigan (Ii 2003: 43).

The dead were buried in various types of graves. Pit graves occurred at Tell Karrana 3 (Stein 1993b: 203–206), Tell Rijim (Bieliński 1987b: 30–31; Bieliński 2003: 493–494), Tell Arbid (Szeląg 2012: 586–690). Tell Mohammed 'Arab yielded simple pit burials, but there were also more elaborate versions: the first consisted of a deeper pit with a subterranean belling-out of the lower shaft (on one side) for the placement of the body and grave goods, and the second had a vertical rectangular shaft with a burial chamber dug out on one side at the bottom (Bolt, Green 2003: 526). At Kutan, the dead (mostly children) were placed in jars, walls of which were sometimes cut (Forest 1987: 88); pot burials occurred also at Tell Mohammed 'Arab and Tell Karrana 3 (Bolt, Green 2003: 528). Many sites also yielded graves with some mud-brick elements. At Tell Mohammed 'Arab, a particular type of grave appeared, consisting of a vertical rectangular shaft with one or more burial chambers dug out on one or more of its sides and closed with mud-brick walls (Bolt, Green 2003: 527). One such grave consisting of a vertical shaft and a side chamber separated by a mud-brick wall was found also at Tell Arbid (Szeląg 2012: 587–588). Tell Arbid also yielded a grave composed of a mud-brick-lined pit (single course of bricks) (Szeląg 2012: 590–592). During the Ninevite 5 period, graves built partly of stone were used as well: at Tell Mohammed 'Arab, a pit sealed by large stones (Bolt, Green 2003: 528), at Tell Jigan, a structure consisting of two longer walls built of

limestone and a stone chamber (Ii 2003: 43), and at Tell Karrana 3, a stone-lined tomb (Stein 1993b: 203–206).

The grave goods were quite standard, including pottery vessels and various objects of personal use, such as pendants and beads, objects made of copper or copper/bronze such as pins or toggle pins, cylinder seals. In some cases, traces of clothing or matting were observed (Bieliński 2003: 493; Stein 1993b: 203–206; Curvers, Schwartz 1990: 13–15).

Some kind of social stratification is reflected in the mortuary data: more elaborate types of graves, higher quantities of pottery, as well as the presence of cylinder seals, beads of precious materials, and metal objects might indicate a higher status of the dead (Bolt, Green 2003: 536). A good example of such a burial was a large stone-chamber grave at Tell Jigan which contained beads of lapis lazuli, carnelian, and rock crystal, a cylinder seal, and a copper pin (Ii 2003:43) or a grave of an adult at Tell Rijim which contained 31 vessels[118] (Bieliński 2003: 493–494).

Settlements' distribution and dynamics

The Tell Leilan area might have been abandoned after the Uruk period, as indicated by the lack of Uruk–Ninevite 5 transitional pottery found during the survey (Ristvet 2005: 57; Arrivabeni 2010: 45). Ristvet writes that either the area was abandoned at this time or the pottery traditions in this area were different from those in northern Iraq where Terminal Uruk/Transitional pottery is present. The end of the Late Uruk period seems to have been marked by the contraction of the settlement, but after a short period of time, the area was resettled (Ristvet 2005: 57). In the early phase of the Ninevite 5 period (Leilan IIIa), only seven settlements in the studied area were occupied, but in the second part of the period (Leilan IIIb–IIIc), 32 new sites appeared. They were located around four larger centers: Tell Leilan, Tell Dogir, Tell 'Aid, and Tell Mohammed Diyab. In the last phase (Leilan IIId), there was a slight decrease in the number of settlements (26 sites existed at the end of this phase), and most of the abandoned sites were small. At the same time, the Lower Town of Tell Leilan expanded causing the increase of the settled area from 15 ha in the early phase of the Ninevite 5 period (Leilan IIIa) to 90 ha in the late phase of the period (Leilan IIId) (Ristvet 2005: 57–59). At the beginning of the Leilan IIa

[118] There was a large painted pedestal jar, a tall painted crater, 25 small cups, an undecorated pedestal-type bowl, two small chalices, and one bigger cup on a pedestal base (Bieliński 1992: 282–283; Bieliński 2003: 493).

period, the number of sites had grown again to 30 sites, mainly large and small towns and villages (Ristvet 2005: 50–60). The distribution of the sites supports the theory that the settlement continued between the last phase of Ninevite 5 (Leilan IIId) and the beginning of the second half of the 3rd millennium BC (Leilan IIa) (Ristvet 2005: Fig. 3.4–3.5; see also, Stein, Wattenmaker 2003: 365; however, they refer only to the survey carried out in 1987).

In the region of Tell Hamoukar (Fig. 20), the number of Ninevite 5 sites was very low both in comparison to the LC3–5 period and to the other areas. There were only four settlements of which Tell Hamoukar was the largest; the site had grown from probably as little as 8 ha at the beginning of the period to 98 ha at its end. The other three settlements were tiny (0.87–1.18 ha). Ninevite 5 pottery found during the survey was mostly of late date. Of these four settlements, Tell Hamoukar was the only site which yielded "crudely excised decorated types"; thus, as Jason Ur writes, "there is no evidence that Hamoukar had any neighbors within the survey region at the end of Period 6" (Ur 2010: 106). However, in the second part of the 3rd millennium, all four sites were occupied; at that time, the number of sites had grown significantly in this area (Ur 2010: 105–108). Tell Hamoukar was the only certain site of *type c* in the area; the three other sites seem to belong to *type d*. The existence of only one site of *type c* prevents the application of Kintigh's formula since in this case, the average number of contemporaneously occupied sites would be less than one.

Not far to the east from the Tell Hamoukar region lies the area of Tell al-Hawa.[119] The contrast in the number of Ninevite 5 settlements between these two regions is clearly visible. In the Tell al-Hawa region, there were 32 sites with Ninevite 5 pottery (six more were described by Wilkinson and Tucker as having "traces" of the Ninevite 5 period). A large south-western part of the survey area was abandoned after the Late Uruk period, and Ninevite 5 settlements were distributed mainly in the north-eastern part of the area (Wilkinson, Tucker 1995: Figs 35 and 37). The number of settlements decreased in the Late Uruk period, but in the Ninevite 5 period, a trend towards urbanization was developing again (Ball, Wilkinson 2003: 344). The biggest settlement in the area was Tell al-Hawa. During the Ninevite 5 period, the main settled area at Tell al-Hawa was located to the south and south-east of the main mound, covering some 13 ha. Two smaller mounds to the west and possibly also one small mound to the north were settled as well,

[119] These two large tells are separated by a distance of 32 km, but the borders of the surveys are only 2.5–5.5 km apart.

covering additional 11 ha. Also, some 18 ha of the main mound were sparsely occupied, adding up to a total of 42 ha (Ball, Tucker, Wilkinson 1989: 32–34). Smaller settlements, varying between 2 to 8 ha in area, were dispersed around Tell al-Hawa at a distance of 4.5–5 km (Ball, Tucker, Wilkinson 1989: 17; Ball, Wilkinson 2003: 341). There were also two smaller centers, Kharaba Tibn and Abu Kula, which were surrounded by clusters of smaller sites. The three-tier hierarchy (central town, small towns, and satellite villages) appeared for the first time in the North Jazira in Ninevite 5. Ball and Wilkinson believe that the satellite settlements supplied the bigger center at Tell al-Hawa with agricultural products (Wilkinson, Tucker 1995: 50; Ball, Wilkinson 2003: 341–344).

The interpretation of the settlement changes between the Late Uruk and Ninevite 5 periods is problematic. As was mentioned in the chapter about the settlement distribution in period 5, it is not clear whether Uruk/Ninevite 5 transitional pottery has been found during Wilkinson and Tucker's survey. Thus, it is not certain whether the transition between Uruk and Ninevite 5 in this region was characterized by an abandonment of the area or by a very low level of continuity. As a result, again as in the case of the LC3–5 period, two interpretations are possible. If we assume that some continuity between Uruk and Ninevite 5 occurred (Fig. 21), then, according to Kintigh's formula, the average number of contemporaneously settled sites could vary between 11 and 15.67 (Table 19). In this case, the abandonment and establishment rates have the same value which might suggest quite balanced changes in the settlement. If the complete abandonment (Fig. 20) after the Uruk period is assumed, then the average number of contemporaneously occupied sites might have been much lower, varying between 5.5 and 9.11 (Table 20). The difference between the rates of establishment and abandonment would be big, suggesting a dynamic and changing settlement. No matter which interpretation is accepted, it is clear that although the period was much shorter than the previous ones, the number of new settlements was very high, and also the majority of them (21 out of 32 sites) were abandoned before the second half of the 3rd millennium. Some other regions also experienced a decrease in the settlement at the end of the Ninevite 5 period.

If we consider the number of settlements founded in totally new places and the number of those established in places that were occupied before, more than a half of the settlements (17 out of 32) were located in places which already had a history. Five of these might have been continuously occupied till the Middle Bronze Age; others yielded also potsherds from later times but not from more than two succeeding periods.

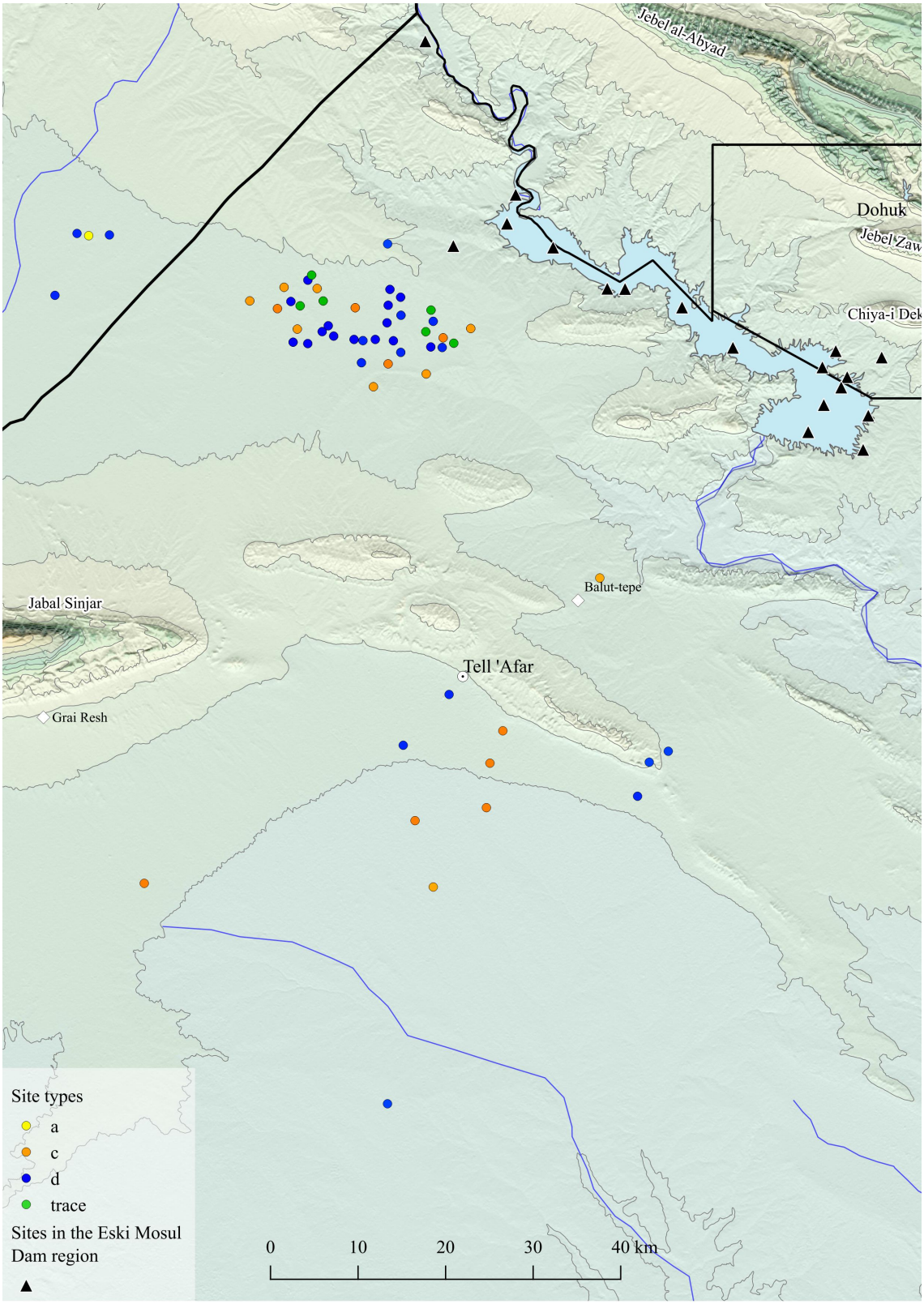

Fig. 20. Ninevite 5-period occupation in the regions of Tell Hamoukar, Tell al-Hawa, and Tell ’Afar (assuming abandonment at the end of the Uruk period) (map: J. Mardas)

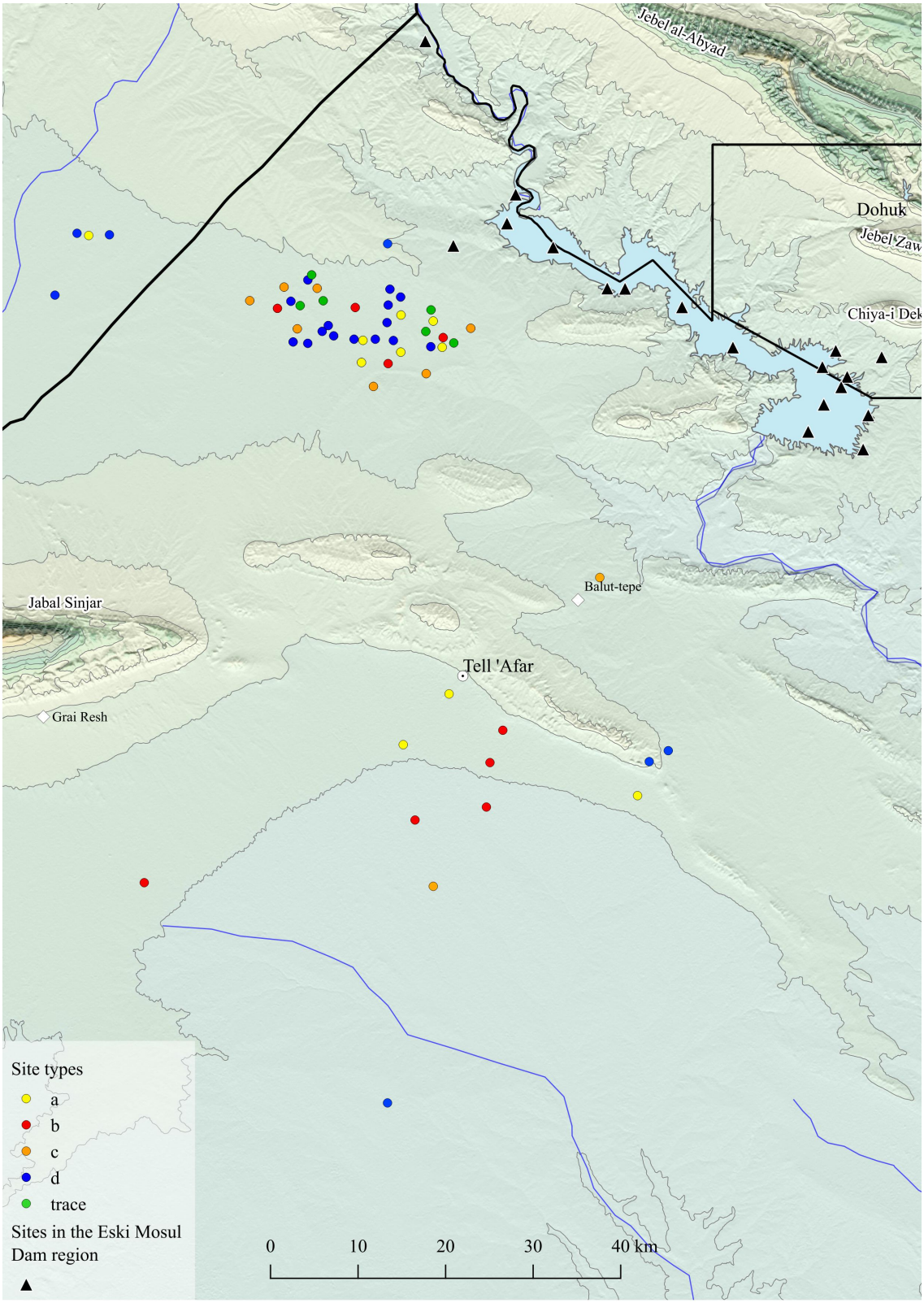

Fig. 21. Ninevite 5-period occupation in the regions of Tell Hamoukar, Tell al-Hawa, and Tell ’Afar (assuming some level of continuity at the end of the Uruk period) (map: J. Mardas)

Table 19. Ninevite 5-period occupation in the Tell al-Hawa region (assuming some continuity between Uruk and Ninevite 5)

a	*b*	*c*	*d*	Occ_{abc}	Occ_{d+}	Occ_{d-}	Occ_{d}	*Occ*	*Min. no of sites at period's*		*p**	E_{occ}	A_{Occ}	*Total no of sites*
									beginning	*end*				
7	4	7	14	11	4.67	4.67	4.67	15.67	11	11	400	0.053	0.053	32

Table 20. Ninevite 5-period occupation in the Tell al-Hawa region (assuming abandonment at the end of Uruk)

a	*b*	*c*	*d*	Occ_{abc}	Occ_{d+}	Occ_{d-}	Occ_{d}	*Occ*	*Min. no of sites at period's*		*p**	E_{occ}	A_{Occ}	*Total no of sites*
									beginning	*end*				
0	0	11	21	5.5	7.22	0	3.61	9.11	0	11	400	0.08	0.053	32

Table 21. Ninevite 5-period occupation in the Tell 'Afar region (assuming some continuity between Uruk and Ninevite 5)

a	*b*	*c*	*d*	Occ_{abc}	Occ_{d+}	Occ_{d-}	Occ_{d}	*Occ*	*Min. no of sites at period's*		*p**	E_{occ}	A_{Occ}	*Total no of sites*
									beginning	*end*				
3	5	2	7	7.5	1.56	2.1	1.83	9.33	8	7	400	0.023	0.025	17

Table 22. Ninevite 5-period occupation in the Tell 'Afar region (assuming abandonment at the end of Uruk)

a	*b*	*c*	*d*	Occ_{abc}	Occ_{d+}	Occ_{d-}	Occ_{d}	*Occ*	*Min. no of sites at period's*		*p**	E_{occ}	A_{Occ}	*Total no of sites*
									beginning	*end*				
0	0	7	10	3.5	4.12	0	2.06	5.56	0	7	400	0.043	0.025	17

In the area of the Eski Mosul Dam, there were 18 sites dated to Ninevite 5 (Fig. 20), slightly more than in the LC1–5 period. Unlike the LC1–2 period, they were a bit more numerous in the southern part of the area. During the Ninevite 5 period, Abu Dhahir was a small village, no larger than its neighbors Siyana and Gir Matbakh. These two latter sites seem to have been continuously used from the Late Uruk period. A continuous transition from Late Uruk to Ninevite 5 is represented most likely also at Tell Shelgiyya (Ball 2003: 12–13; Ball, Wilkinson 2003: 337–339).

The number of sites in the region of Tell 'Afar decreased in comparison to the previous period. There were 17 settlements dated to Ninevite 5; however, it must be kept in mind that the Ninevite 5 period was much shorter than the previous ones. The settlements were dispersed throughout the area. Those which might have been continuously occupied in the following period or experienced only short episodes of abandonment were concentrated in the vicinity of Tell 'Afar, while those which seem to have been abandoned for long periods of time were located in more distant places. Two of these remote settlements were located ca. 50 km to the north-west from Jabal Makhul and ca. 110 km south from Tell 'Afar.[120]

As in the case of the region of Tell al-Hawa, it is not clear if the transitional pottery was present on any of the sites in the Tell 'Afar region; thus, there is no certainty about whether the settlement continued at some sites or were they all abandoned. If some level of continuity is assumed (Fig. 21), then according to Kintigh's formula, the average number of contemporaneously occupied sites varied between 7.5 to 9.33 (Table 21). In this situation, the ratios of establishment and abandonment have similar values indicating a quite stable settlement. However, if there was a period of abandonment (Fig. 20), the average number of contemporaneous settlements would be lower, between 3.5 and 5.5 (Table 22). The difference between the ratios of establishment and abandonment would be large, which might suggest some significant changes in the settlement. Despite different interpretations, in both cases, the number of settlements is not as low as in the earlier periods, if we take into account the fact that the Ninevite 5 period lasted much shorter than the previous ones. Eight Ninevite 5 sites might have been potentially continuously occupied since Uruk till Ninevite 5 since they have yielded pottery from both periods. Five of them plus two other Ninevite 5 sites yielded also pottery dating to the second half of the 3rd millennium BC. In the Tell 'Afar region, almost all the Ninevite 5 settlements were occupying places which had been used in earlier periods. Only two sites were located in not previously inhabited places.

A significant decrease in the number of settlements was recorded in the LoNAP area, where 115 sites dated to the Late Chalcolithic period and 78 dated to Ninevite 5

[120] In the same region is located the Hassuna-period site Umm Dabaghiyah where hunting onagers and gazelles constituted an important activity. Perhaps the Ninevite 5 people used this area in a similar way, especially since at some sites on the Middle Khabur (such as Tell 'Atij and Ziyadeh) which are more or less contemporary to the Ninevite 5 period numerous bones of onager and gazelle suggest frequent hunting. The remains of equids formed a significant part of the bone assemblages in the settlements located in the Hamrin region to the south-east. Onagers were an important source of meat, and hunting these animals has long traditions in the area (Koliński 2012: 241, 247, Tab. 1).

have been identified. Nevertheless, 78 Ninevite 5 sites still constitute a very high number. The Ninevite 5 settlements formed three concentrations; the first in the Navkur plain, the second to the south of Ba'adreh, and the third between Dohuk and Eski Mosul Dam Lake (Gavagnin 2017). The transition between the 4th and 3rd millennium BC in the LoNAP area is so far problematic. Preliminary research results indicate that there was no Terminal Uruk and Transitional pottery found (Gavagnin 2016: 75–79; Gavagnin 2017). Gavagnin writes that only two out of 29 sites (known at that point) "were not inhabited in the Late Chalcolithic, and all of these were occupied in the Mid-Late 3rd Millennium BC" (Gavagnin 2016: 79). In the second part of the 3rd millennium, the number of sites increased to 219 (Gavagnin 2017).

The region investigated by the EHAS project seems to have experienced an increase in the number of settlements, in contrast to the above-mentioned LoNAP area. So far only 14 settlements from the LC3–5 period have been recorded, and there were 29 settlements dated to the Ninevite 5 period. Most of the sites were located to the south of Jebel al-Abyad, and a few occurred on the Sindaya plain to the north of the mountains (Sconzo 2017b). Excavations undertaken at the site Muqable III unearthed levels dated to the Terminal Uruk/Transitional pottery (ETG 1). However, there is a lack of Transitional Ninevite 5 Style (ETG type 23) which, according to the excavators, "may suggest the existence of an occupational gap (between phases 12 and 11) in the sequence so far detected at Muqable III" (Pfälzner et al. 2017: 75).

An increase in the number of Ninevite 5 sites occurred in the area investigated by the EPAS project. So far, the project has recorded 35 sites with Ninevite 5 settlements (there were 23 settlements in the LC3–5 period in the same area). The sites were located in the southern part of the concession (the only one investigated so far). Settlements lay along the Kurdara and Siwasor streams. It also seems that there was a small concentration of sites around site 220 which was the largest settlement within the investigated area during this period (Ur 2017b). In the second half of the 3rd millennium, the number of sites decreased very slightly (Ur 2017b).

The UGZAR area

The almost complete lack of Terminal Uruk and Transitional pottery in the UGZAR area might indicate a probable abandonment of the area, however, not for a very long time. Plenty of settlements seem to appear in the early stages of the Ninevite 5 period as

indicated by the presence of painted Ninevite 5 pottery. There were 58 settlements (Fig. 22), 11 of which were occupied in the LC3–5 period. Only one site (US0291) yielded pottery which perhaps can be dated to the time between Late Uruk and Ninevite 5; according to Ławecka (in press), "only one fragment may be, very tentatively, ascribed to the Terminal Uruk period," and another potsherd "might perhaps be early (Transitional?)."

The settlements were typically located in the vicinity of rivers, streams, or springs; usually, the distance was quite small, between 0 and 500 m, in one case it was 900 m, in another 2 km. Flat or slightly undulating areas with rather good agricultural conditions were chosen most often for the location of a village. The Ninevite 5 settlement in the UGZAR area shows clear differences in respect to the LC3–5 period, despite the fact that the settlement continued in the same regions.

There seems to be a small cluster of settlements in the lower part of the Karabak valley. Three sites belonging to this cluster, US065, US071, and US060, were all settled in the LC3–5 period, and they were also occupied in Ninevite 5. All these settlements yielded pottery from the second half of the 3rd millennium BC as well. One of them (US071) might have been continuously occupied since it yielded a fragment of a pedestal/footed base of a type that was popular in ETG 3 but occurred also in ETG 4, as well as potsherds dated to the early stages (Early Dynastic III) of the second half of the 3rd millennium. However, US071 did not yield incised/excised Ninevite 5 types. All of these three sites are multi-period settlements. Two other sites located in the lower Karabak valley, US066 and US070, were settled and abandoned within Ninevite 5. The small cluster of sites between the Karabak and Gunapak valleys consisted of three sites, one of which (US038) had been settled also in the previous period, and the other (US036) was resettled in the following period, after having been abandoned. There were also two isolated settlements located between these two clusters. One of these sites (US049) was occupied in LC3–5 and resettled in Ninevite 5; probably quite early since it yielded painted pottery. All of the sites in the Karabak valley and between the Karabak and Gunapak valleys seem to have been abandoned before the following period, except perhaps US071. Three more were resettled in the second half of the 3rd millennium: US060, US065, and US036.

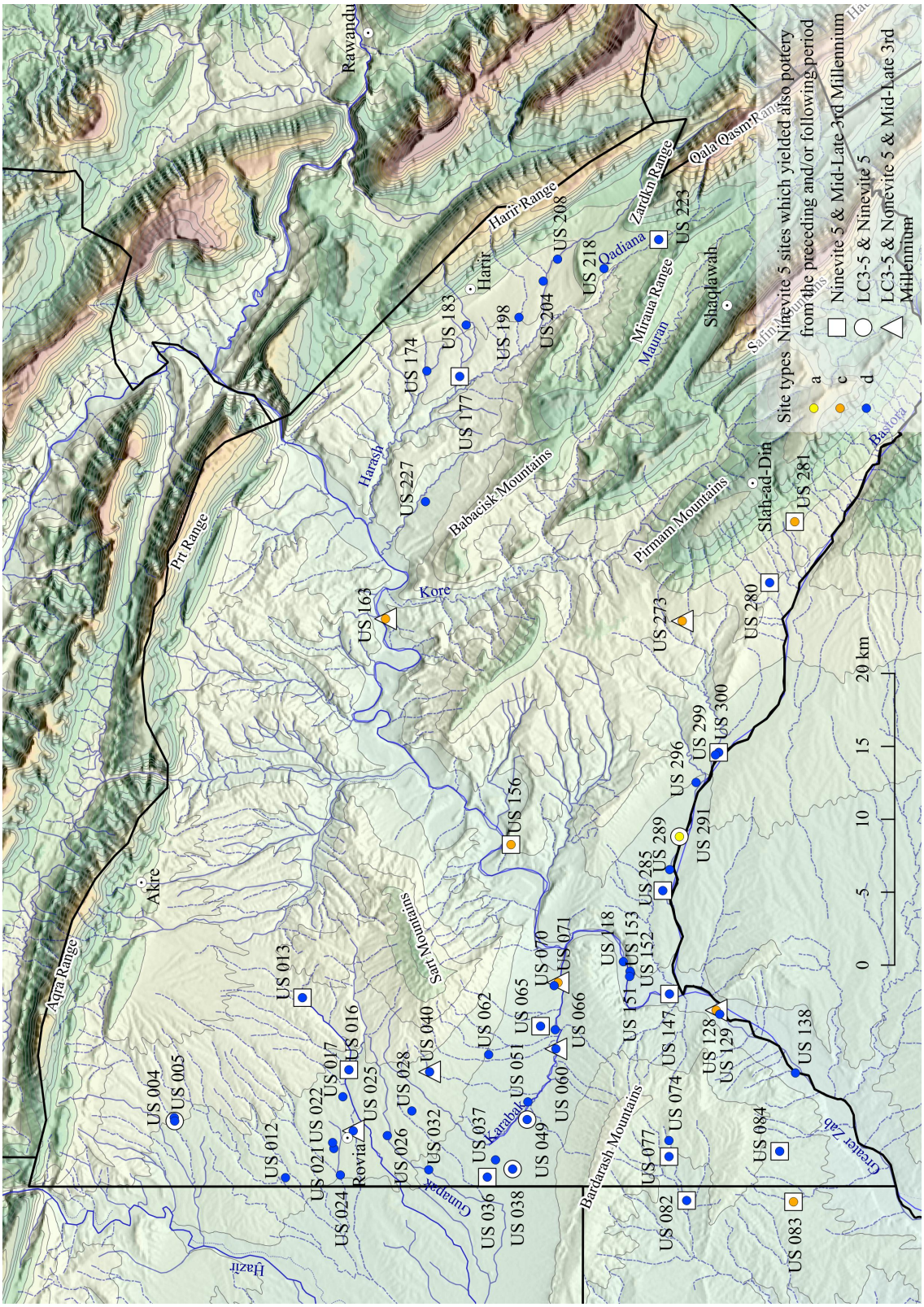

Fig. 22. Ninevite 5-period occupation in the UGZAR area (map: J. Mardas)

Another concentration of settlements lay around the city of Rovia:[121] US012, US016, US017, US021, US022, US024, US025, US026, US028, US032, US040. In the previous period, there were only two sites located there, US025—Gird-i Rovia itself, and US040 ca. 6 km to the south-east of it. Both yielded pottery from the second half of the 3rd millennium as well. Site US040 might have been occupied in the early stages of the Ninevite 5 period since a singular painted potsherd was found there. All of the sites in the Rovia cluster might have been abandoned during the Ninevite 5 period, and only two of these sites (US025 and US024) were probably occupied throughout most of the period since they had both painted and incised/excised potsherds. Five more sites (US012, US024, US021, US017, US032) yielded pedestal/footed bases, and since such pottery was used also in ETG 4, it cannot be excluded that these sites existed also in the later stage of Ninevite 5. One more site (US013) was located to the north-east of the Rovia cluster, in a valley surrounded by undulating areas. The site was abandoned at the end of Ninevite 5 (it yielded an incised/excised sherd); it was later resettled in the Post-Akkadian period.

Further northwards, there was another cluster of four sites that were settled in various periods; two of them were occupied in Ninevite 5: US004 and US005. The former yielded pottery from LC3–5 and was probably resettled in the early phase of Ninevite 5 since painted potsherds have been found there. However, these two sites were abandoned at the end of the period, and a mid 3rd-millennium settlement was found at the other two sites belonging to this group. It seems that the settlement was shifting between these locations with time.

Many settlements of the Ninevite 5 period have been recorded also on the Harir plain, which is quite surprising especially considering that in the earlier period this area was abandoned. It appears that the sites on the plain did not form any clusters but were more or less evenly dispersed throughout the plain. They all seem to have been established early in the Ninevite 5 period since they yielded painted potsherds. Two of them (US208 and US183) might have been occupied throughout the whole period (they yielded incised/excised pottery as well). Site US177 might have been abandoned sometime during Ninevite 5, but it seems to have been resettled at an early phase of the second half of the 3rd millennium (Early Dynastic III). The rest of the Ninevite 5 sites on the Harir plain were not resettled in the following period. Two more sites (US218 and

[121] Some Ninevite 5 sites were discovered by the LoNAP team to the south-west of Rovia, just behind the borderline of the UGZAR and LoNAP areas, and they seem to be a part of the Rovia cluster.

US223) were located in the Qadiana valley. The former was not occupied in the following period, while the latter might have been used again in the Post-Akkadian period.

Six sites were dispersed along the northern bank of the Bastora stream, in the western part of the valley. One of them (US0291) might have been continuously occupied since LC3–5. Four others (US285, US296, US299, and US300) were founded probably in the early phase of Ninevite 5 since they yielded painted pottery. Two of these sites seem to have been abandoned before the end of Ninevite 5; both yielded pottery also from the second half of the 3rd millennium. Site US289 yielded only one potsherd from ETG 3, and there is no evidence of human activity in the following period.

Two sites were located to the north of the Bastora valley, between the Bastora valley and the Pirmam mountains. Sites US280 and US281 might have been occupied since the beginning of the period. US280 yielded a painted potsherd and US281 a pedestal/footed base. It cannot be excluded that US281 was settled continuously since the pedestal/footed bases were used also in ETG 4 and the site has yielded pottery from the Early Dynastic III as well. It was located on a much later road leading west of the Pirmam mountains and further along the Kore stream, west of the Safin mountains to present-day Shaqlawah where it divides, and one branch leads north through the Miraua pass to the Harir plain and the other to the east to the Rania plain. Perhaps this track was also known earlier.

Another site located on a route known from much later times is US273. The site was settled since the beginning of the Ninevite 5 period (it also had pottery from LC3–5 as well as from earlier periods). It is also possible that the site was continuously occupied till the second half of the 3rd millennium BC (painted and incised/excised potsherds as well as sherds from the Early Dynastic III have been found). Following the old route, one reaches the Kore valley; from there, a track leads to the north through the Babacisk pass, but the journey can be continued also to the north-west along the Kore stream which joins the Greater Zab in the vicinity of US163. Site US163 was occupied since the early stages of Ninevite 5 (painted potsherds) and was perhaps continuously occupied through the second half of the 3rd millennium since it yielded excised/incised potsherds and also pottery from the Early Dynastic III. A few kilometers to the south-east of US163 lies another site that has yielded Ninevite 5 sherds, US227. It was a rather small village, occupied since the beginning of the Ninevite 5 period (it yielded painted pottery), possibly till its late stages (there were pedestal/footed bases but no incised/excised pottery).

A concentration of sites lay at the confluence of the Greater Zab and the Bastora. There were three sites located very close to each other: US151, US152, and US153. In

the case of the first one, it was very difficult to determine its limits because the site was covered by modern houses, but the other two were only 20 m apart. It is possible that these three sites formed one settlement in this period. Site US151 might have been a cemetery used by the inhabitants of one or both of the other sites (Koliński, personal communication). A complete Ninevite 5 vessel was found during the digging of a sink-pit in the village, which probably cut into a grave. Moreover, on the opposite bank of the river, site US118 was located. None of these sites were occupied in the second half of the 3rd millennium. Another settlement, a small tell US147 (the whole site measured 1.5 ha in area), lay very close to the confluence of the Greater Zab and the Bastora. It was probably established in the early stages of Ninevite 5, as it did not yield any evidence of human activity from the previous periods and was used continuously till the Neo-Assyrian times.

There were three other sites dispersed along the Greater Zab. One of them was a tiny settlement US156 established at the beginning of Ninevite 5 and perhaps continuously occupied till the beginning of the second half of the 3rd millennium or only resettled (the site yielded painted pottery, a pedestal/footed base, and one Early Dynastic III sherd). To the south of the confluence of the Greater Zab and the Bastora, on the western bank of the Greater Zab lay sites US128 and US129. The first was small, the whole area covering 2.8 ha, and the second was even smaller measuring only 0.37 ha. They were only a few meters apart and perhaps constituted one settlement extending along the edge of the Greater Zab's terrace. Site US128 (which also yielded one fragment of a beveled rim bowl) might have been used throughout the whole Ninevite 5 period (there were painted sherds, pedestal/footed bases, an incised/impressed sherd, and a crescent lug on a hole-mouthed pot) and most probably continued to be used in the Early Dynastic III and during the later stages of the 3rd millennium. Another settlement was US138, located ca. 6.5 km to the south-west. After the Ninevite 5 period, the place was not resettled till the Neo-Assyrian times. From this area, a path (visible on old British maps and the Corona imagery) cuts the hilly areas to the west and leads towards the area south of the Bardarash mountains where two more Ninevite 5 sites are located.

The two sites located to the south of the Bardarash mountains, US083 and US084, were new, i.e., established at the beginning of Ninevite 5, and might have been used throughout the whole period. Both of them had also potsherds from a few of the following periods, and they seem to have been abandoned for a longer time only after the Neo-Assyrian times. These two sites were located at the intersection of pre-modern paths

visible on old British maps and the Corona imagery, some of which are still used as ground roads leading across fields. An old path leads also from US083 to the Gume Zard-i valley located to the north where three other Ninevite 5 settlements were discovered. Previously, in the Ubaid period, this area was occupied by just one site (US077) which was only resettled in the Ninevite 5 period. These three sites were established at the beginning of the Ninevite 5 period, and two of them (US082 and US077) have yielded pottery from the second half of the 3rd millennium as well. The UGZAR project has investigated only the eastern part of the Gume Zard-i valley, and it is possible that there were more settlements between the studied area and the Hazir river (a huge tell visible on the satellite imagery is located in the Galuk village).

The dynamics of Ninevite 5 are different than in the previous periods. First of all, it should be stressed that the number of settlements increased significantly despite the fact that this period was much shorter than the previous ones and that the area might have been abandoned at the end of LC3–5. Most of the Ninevite 5 settlements were probably established at the beginning of the period since they have yielded painted pottery (39 out of 58 sites). It also seems that the number of sites dropped to 13 (or less) at the end of Ninevite 5. Among these 13 sites, only seven had excised/incised pottery and only two (US163 and US083) had also pottery from the Early Dynastic III; the other five sites (US273, US156, US071, US128, US281) had pedestal/footed bases and pottery typical of the Early Dynastic III period. The vessels with pedestal/footed bases were used in ETG 2b-3-4, but when they occur together with the Early Dynastic III, it is perhaps possible that the site was used in the last stages of Ninevite 5 and continued into the second half of the 3rd millennium. In total, 23 Ninevite 5 sites yielded also pottery from the second half of the 3rd millennium.

Table 23. Ninevite 5-period occupation in the UGZAR area

a	*b*	*c*	*d*	Occ_{abc}	Occ_{d+}	Occ_{d-}	Occ_{d}	*Occ*	*Min. no of sites at period's*		*p**	E_{occ}	A_{Occ}	*Total no of sites*
									beginning	*end*				
1	0	7	50	4	6.14	0.98	3.56	7.56	1	7	400	0.143	0.128	58

Of course, not all of the sites were contemporaneous; the average number of sites occupied at the same time seems to be rather low, between 4 and 7.56 (Table 23), which compared to the total number of Ninevite 5 sites might suggest a quite dynamic

settlement. The ratios of establishment and abandonment are high, but they have similar values. There were plenty of settlements which were occupied and abandoned within Ninevite 5. Eleven sites from this period had also pottery from LC3–5, and seven of these had also pottery from the second half of the 3rd millennium.

Conclusions

The excavated data from north-eastern Syria and northern Iraq confirm that the existence of small settlements focused on the production and storage of agricultural surpluses was typical for the Ninevite 5 period. This is in contrast to the previous periods and might indicate some changes in land use, perhaps the intensification of agriculture. The existence of large complexes of *siloi* and granaries also indicate that these surpluses were a valuable commodity, which was perhaps stored and controlled by local elites as a source of power. Collecting large surpluses of grain requires good organization of work, and its storage and distribution need management. The organization of work, in turn, needs a leader or a few people in charge who can coordinate the work. Some basic stratification of the society is visible in the mortuary data, although generally, the grave goods were quite poor.

It is also visible that after the end of the Uruk period, the number of valuable materials decreased which suggests that the contacts with other regions were less intense. The lack of demand for northern goods might have caused the reorganization of work in the centers focused on craft production and exchange. The temples which previously seemed to have been engaged in craft production became much simpler in construction, smaller and modest. However, it seems that some of them still performed administrative functions.

When we look at the settlement patterns, we see some differences between the regions investigated by various survey projects. In the Tell Leilan region, there was a high continuation of settlement between the first and second half of the 3rd millennium BC, while in the UGZAR area it seems that the end of Ninevite 5 was characterized by a reduction of settlement and a rather low continuation towards the following period. The region of Tell Hamoukar had an extremely low number of settlements in comparison to all the other areas. The regions of Tell al-Hawa, Tell ’Afar, and Tell Hamoukar all experienced a decrease in the total number of settlements compared to the previous Uruk period, while in the region of the UGZAR the number of Ninevite 5 settlements was

higher even when compared to the total number of LC1–5 sites. In the regions studied so far by the EHAS and the EPAS projects, the growth in the number of settlements in Ninevite 5 in comparison to the LC3–5 period has been recorded. In the LoNAP area, the number of sites dated to Ninevite 5 was lower than in LC3–5. However, in the case of all these areas, it should be taken into consideration that Ninevite 5 was much shorter than the previous periods; in other words, there was simply much more time in the previous periods in which to establish more settlements. Considering this shorter span of Ninevite 5, it seems that all regions except Tell Hamoukar witnessed a much more dynamic settlement pattern in comparison to the Late Chalcolithic, especially in the UGZAR area where the number of Ninevite 5 sites was three times bigger than the number of LC3–5 sites.

Most of the settlements in the UGZAR area seem to have been either small villages or a short-lived settlement or both. Only a few settlements were possibly occupied throughout the whole period, and a limited number seems to have been continuously occupied after the end of Ninevite 5. In contrast to the Tell al-Hawa area, and also Tell Leilan, there were no large settlements with minor ones clustered around them, but rather a few clusters of small sites, which were not necessarily occupied at the same time, especially in the later part of the period when the tendency towards abandonment grew stronger. In the Harir plain, there was yet another trajectory of development since the earlier occupation in this area was scarce, and only in Ninevite 5 sites became more numerous, but they were all dispersed. Some of the Ninevite 5 sites in the UGZAR area became multi-period settlements with a long occupational history, either continuous or characterized by multiple resettlements. Some of the settlements might have been related to the communication routes which are visible on old British maps and the Corona imagery; however, the existence of these routes in Ninevite 5 can only be hypothesized.

Chapter 4: Conclusions

This dissertation investigated how human activities reflected in the economy, social relations, and ideology were shaping the settlement patterns in the area of northern Iraq from the Hassuna till the Ninevite 5 period. According to modern views on the subject, settlement patterns are created by human activity rather than the natural environment. Natural conditions are more or less stable, the character of soils does not change quickly and dramatically, rivers and streams flow through valleys for centuries, changing their course only slightly. Thus, it cannot be said that natural conditions were shaping settlement patterns; the people's choices, of which we have only partial evidence, were the driving force. In the case of northern Iraq, the settlements occupied the same regions, with similar and quite stable environmental conditions. The changes in the settlement were related to the changes in the economic, social, and ideological spheres. Large centers developed on the crossroads of trade routes, while in more peripheral regions the settlement was more heterarchical. Settlement structures such as houses and temples were connected with the socio-ideological sphere of human activity (see more below).

The aim of this dissertation was also to consider the changes and continuity in the settlement patterns. The data came from recent and older surveys as well as from the excavations undertaken in the studied area. The surveys yielded data about the location of the settlements and their chronology, while the excavations provided information concerning the settlement structures (houses, workshops, temples), economy (subsistence, craft specialization, exchange), social stratification (burial practices). All of these elements are related to settlement patterns. One of the problems with survey data is that the settlements from a given period are usually perceived as contemporary as if they were all settled simultaneously. To investigate the dynamics of the settlement processes and to overcome the contemporaneity problem, Kintigh's (1994) modification of Dewar's (1991) model was used.

Kintigh's equations turned out to be useful in some cases. It should be remembered that the accuracy and possibility of application of Kintigh's equations depend on the quality of available archaeological data. In some cases, the data did not allow for reasonable results of the equations; in others, the results might be skewed. For the calculation of the average number of contemporaneously occupied sites, the most

important are sites of *type a*, *b*, and *c*; thus, when there are none, no calculation can be made at all. In the case when sites of only one of these types exist, the results will be less reliable than when two or more sites of *type a*, *b*, or *c* are present. It was also impossible to apply Kintigh's equations to the Hassuna and Halaf periods in the UGZAR area since all of the sites from these periods belonged to *type d*. Unreliable results were obtained in the region of Tell Hamoukar for the periods of Hassuna, Halaf, Ubaid, and Ninevite 5. In all of them, the total number of sites was very low, and sites of *type d* predominated (in each of these periods there was only one site of *type c*).

Nevertheless, the results of Kintigh's equations provide a different perspective on the dynamics of the settlement in each period. All of the considered periods have very long time-spans, Ninevite 5 being the shortest. It is highly unlikely that all settlements from a given period were occupied simultaneously and throughout the whole period. Kintigh's equations suggest that these numbers were much lower than the total number of settlements from a given period. There are also differences in the proportion of the site types through various periods which sheds some light on the settlement dynamics.

The UGZAR project has recorded 317 settlements, 83 of which had pottery from one or more of the investigated periods (from Hassuna to Ninevite 5). The sites were usually very small; their average area during all of the investigated periods did not exceed 1 ha (Table 24). The smallest sites measured between 0.10 ha in the Halaf and 0.36 ha in the LC 1–2 period, while the largest ones covered an area from 1.50 ha in the Halaf period up to 3.97 ha in the Ninevite 5 period (Table 24).

Table 24. The average, largest, and smallest areas of the sites in each period (based on UGZAR/Rafał Koliński's estimations)

Period	Hassuna	Halaf	Ubaid	LC 1-2	LC 3-5	Ninevite 5
Average area in hectares	0.80	0.66	0.73	0.96	0.96	0.93
The largest area of a site	2.18	1.50	2.18	2.50	2.18	3.97
The smallest area of a site	0.25	0.10	0.20	0.25	0.36	0.26

Most of the sites were located in the vicinity of streams, on flat or slightly undulating terrain with soils suitable for agriculture. Areas with the most numerous sites are the Navkur and Harir plains; quite many settlements lay also along the Greater Zab

and the Bastora rivers but only in the Ninevite 5 period; earlier the settlement along these rivers was sparse.

In the Karabak valley and on the Navkur plain, the settlements often formed clusters: one was located in the northern part of the Navkur plain, another in the vicinity of the modern city of Rovia, and the third around the site US060, in the eastern part of the Karabak valley. The settlements in the Harir plain did not form any clusters; they seem to have been more evenly dispersed. In the three mentioned clusters, the villages could have moved from one place to another throughout the periods. This may indicate some local traditions and people's attachment to particular locations.

Table 25. Number of settlements located on previously occupied and unoccupied sites

Survey	Period	Settlements on previously unoccupied sites	Settlements on previously occupied sites	Total no of sites	Percentage of settlements on previously unoccupied sites	Percentage of settlements on previously occupied sites
Tell 'Afar	2	8	16	24	33%	67%
Tell al-Hawa		19	22	41	46%	54%
UGZAR		20	2	22	91%	9%
Hamoukar		12	1	13	92%	8%
Tell 'Afar	3	7	17	24	29%	71%
Tell al-Hawa		22	23	45	49%	51%
UGZAR		5	14	19	26%	74%
Hamoukar		2	0	2	100%	0%
Tell 'Afar	4-5	12	16	28	43%	57%
Tell al-Hawa		22	40	62	35%	65%
UGZAR	4	12	13	25	48%	52%
Hamoukar		8	5	13	62%	38%
UGZAR	5	7	11	18	39%	61%
Hamoukar		8	11	19	42%	58%
Tell 'Afar	6	3	14	17	18%	82%
Tell al-Hawa		16	16	32	50%	50%
UGZAR		31	27	58	53%	47%
Hamoukar		0	4	4	0%	100%

The preference for occupying previously settled sites is visible also in the Tell ‘Afar, Tell al-Hawa, and Tell Hamoukar regions (Table 25). In these regions, most of the settlements from a given period also yielded pottery from earlier periods, while newly established settlements were less frequent. This is especially apparent in the Ubaid and Late Chalcolithic periods. In other periods, the situation differs depending on the region; in the Halaf period, settlements located on previously occupied sites predominated in Tell ‘Afar and Tell al-Hawa regions, while in the UGZAR and Tell Hamoukar regions, sites located in new places constituted the majority. The fact that the land was used in the past might have been attractive for people, and such areas might have had a special heritage value which could have been more important than the environmental context (Verhagen et al. 2016: 633).

There are also two isolated sites which were occupied throughout most of the periods. US163 has pottery from all periods except Hassuna, and US273 only lacks pottery from the Hassuna and Ubaid periods. US273 is located on a much later route leading from the Erbil plain across the Babacisk mountains to Harir, Rawanduz, and on towards Azerbaijan. US163 has southern Uruk pottery, and it also yielded one fragment of obsidian which could indicate that the settlement has participated in some exchange with other regions. Southern pottery was found also at US273. Perhaps a branch of the route leading through US273 started there, following the Kore valley to the north-west and then to the northern edges of the Harir plain. Using this track might have been easier than climbing to a high pass in the Babacisk mountains.

The transition from one period to another might be problematic in some regions. Such a situation occurred in the case of Hassuna-Halaf, Halaf-Ubaid, and LC3–5-Ninevite 5 transitions. It seems that during the transition from Hassuna to Halaf in the UGZAR area, an abandonment might have occurred. All the Hassuna settlements in this area seem to have been abandoned before the Halaf period, and only two of them were resettled during the Halaf period. This is quite surprising since transitional pottery was recorded in the neighboring areas. According to Nieuwenhuyse (2017a), the abandonment is possible; however, he also points out that it cannot be excluded that such a confusing situation was caused by some processes which are not yet understood. There is a possibility that some older types of pottery were used for a longer period of time and that the Halaf pottery appeared in the UGZAR area already in its developed form.

In the region of UGZAR, the Halaf-Ubaid transition is also quite problematic. There is no Halaf-Ubaid transitional pottery, and it is not clear whether the area was abandoned,

or people switched to nomad lifestyle, or if there was some regional trajectory of development resulting in the prolonged use of older forms. This transitional period is additionally puzzling because of the fact that quite many Halaf sites (11 of 22) were settled also during the Ubaid period.

The transition from LC3–5 to the Ninevite 5 period is even more difficult to explain. Large areas of northern Mesopotamia investigated by survey projects did not yield Terminal Uruk and Transitional pottery. This pottery has not been found in the LoNAP (Gavagnin 2016: 75–79; Gavagnin 2017) and Tell Hamoukar areas (Ur 2010: 104–105), and it is not mentioned either by Wilkinson and Tucker (1995: 49) in the region of Tell al-Hawa or by Ibrahim in the area of Tell ‘Afar; it also did not occur in the Tell Leilan region (Ristvet 2005: 57). In the UGZAR area, only one potsherd can be tentatively ascribed to the Terminal Uruk period (Ławecka in press), and the EHAS project has unearthed levels dated to the Terminal Uruk/Transitional pottery at the site called Muqable III (Pfälzner et al. 2017: 75). The pottery of this kind is mainly known from the excavations undertaken as a part of the Eski Mosul Dam salvage project and from excavations on a few other sites. On the basis of pottery, there seems to be a large discontinuity between LC3–5 and the Ninevite 5 period in the above-mentioned areas. It is difficult to say what caused this; whether large regions were abandoned due to the people changing their lifestyle and becoming nomads or perhaps some other processes took place during that time. The abandonment of the areas of LoNAP, UGZAR, Tell al-Hawa, Tell ‘Afar, and Tell Leilan seems to be quite radical, especially since after this transitional period people lived as before, agriculture was developing, and grill structures, which have a long tradition, continued to be used. Moreover, in the case of the UGZAR area, 11 out of 18 LC3–5 sites were used also in the Ninevite 5 period.

Generally speaking, all of the studied regions were occupied through all of the mentioned periods. However, some smaller areas within these regions could have been abandoned for some time like the southern part of the Tell al-Hawa survey area in the Ninevite 5 period or the Harir plain in the LC3–5 period. The causes for this are difficult to determine, especially considering that these areas were occupied in all the other periods.

The investigated regions do not display a common settlement pattern. They differ with respect to the dynamics of changes in the number of sites from one period to another (Table 26, Chart 1). Large differences occur even between neighboring regions. For example, in the Hassuna period, the number of sites was very low in the Tell Hamoukar

area while in the neighboring region of Tell al-Hawa the Hassuna sites were significantly more numerous. Similarly, the UGZAR area was sparsely settled during the Hassuna period in comparison to the LoNAP and even the EPAS areas, which yielded more sites (although the area of the EPAS has so far been surveyed mostly in its southern part). Regional differences occurred also in the Halaf period: in most of the analyzed areas, the number of settlements dropped, while the Hamoukar and UGZAR regions recorded an increase in the number of sites. In the following Ubaid period, in the Hamoukar and UGZAR regions, the number of sites decreased, in the EPAS and Tell 'Afar, the number of settlements remained stable, and in the Tell al-Hawa and LoNAP regions, the number of sites increased. The LC1–2 period was characterized by a general increase in the number of settlements in the areas of Tell Hamoukar, Tell al-Hawa, UGZAR, and LoNAP. The highest growth occurred in the LoNAP area where the number of sites doubled in comparison to the Ubaid period. A different pattern developed during the LC3–5 period when the number of sites decreased in the EHAS, LoNAP, and UGZAR areas but increased in the regions of Tell Hamoukar and the EPAS. In the Ninevite 5 period, the number of sites dropped in the regions of Hamoukar, Tell al-Hawa, Tell 'Afar, and LoNAP, while in the regions of EHAS, UGZAR, and EPAS it increased, especially in the UGZAR area. Moreover, it must be kept in mind that the Ninevite 5 period was much shorter than the previous period; thus, there was less time for establishing new settlements.

Table 26. Total number of sites per period in each region and the average number of contemporaneously occupied sites based on Kintigh's formula (* *Occ* is the average number of simultaneously occupied sites, ** Alternative shows the average number of simultaneously occupied sites in the case of abandonment)

Region	***Period***	***Total number of recorded sites***	***Kintigh's formula***
Hamoukar	Period 1	6	*Occ** less than 1
	Period 2	13	*Occ** less than 1
	Period 3	2	only 2 sites
	Period 4	13	3.5–5.43
	Period 5	19	3–5.05
	Period 6	4	*Occ** less than 1
Tell al-Hawa	Period 1	44	10–15.45
	Period 2	41	18.5–23.85
	Period 3	45	21.5–27.15

	Uruk	62	17.5–26.68
			Alternative**: 12.5–19.96
	Period 6	32	11–15.67
			Alternative**: 5.5–9.11
Tell ‘Afar	Period 1	27	7.5–10.83
	Period 2	24	15.5–17.61
	Period 3	24	14–16.05
	Uruk	28	10.5–13.07
			Alternative**: 6.5–9.98
	Period 6	17	7.5–9.33
			Alternative**: 3.5–5.56
EHAS	Period 1	no data	no data
	Period 2	no data	no data
	Period 3	no data	no data
	Period 4	18	no data
	Period 5	14	no data
	Period 6	29	no data
LoNAP	Period 1	55	no data
	Period 2	45	no data
	Period 3	58	no data
	Period 4	125	no data
	Period 5	115	no data
	Period 6	78	no data
UGZAR	Period 1	8	all sites abandoned
	Period 2	22	all sites abandoned
	Period 3	19	4.5–6.87
	Period 4	25	9.5–12.2
	Period 5	18	5.5–8
	Period 6	58	4–7.56
EPAS	Period 1	12	no data
	Period 2	8	no data
	Period 3	8	no data
	Period 4	9	no data
	Period 5	23	no data
	Period 6	35	no data

The changes in the size and type of the settlements as well as of the type and location of settlement structures within the settlements seem to be related to the changes in the economy and social structure of prehistoric communities. In the Hassuna period, some sites, for example, the early stages of the Tell Hassuna settlement, yielded traces of perishable structures such as shelters, which might have been used by some mobile population, such as herdsmen and/or hunters. The Halaf period is characterized by the appearance of circular buildings, but at some sites, rectangular ones were still in use. The function and appearance of these circular buildings are still a matter of discussion. During the Ubaid period, new types of buildings appeared: temples and large rectangular or tripartite houses which could accommodate an extended family. Although the Ubaid culture had spread over the whole of Mesopotamia, not every site had all the Ubaid features, and particular regions differed significantly in this respect. Temples might have played a significant role in the organization of the exchange of goods and raw materials, as well as in the process of centralization and development of power. Still, the elites might not have been yet fully formed in the Ubaid period, since the graves do not show much variation in status or rank of the dead. The elites and economic differentiation developed during the LC2 period, which was also the time when large settlements appeared in northern Mesopotamia for the first time. Buildings which might have been used by political leaders date to this period, and burial data clearly indicate the presence of social stratification as well. The LC period displayed different trajectories of urbanization in various parts of the region: in the Khabur triangle, some large centers appeared, while closer to the Taurus mountains, smaller centers were evenly distributed. However, there were also regions with no centers which showed a more homogenous settlement pattern. Large sites such as Khirbat al-Fakhar and Tell Brak (but also small ones like Tepe Gawra) show evidence of craft production, probably providing goods used partly for exchange with other regions. The craft production and specialization were continued in LC3–5. Tell Hamoukar and Tell Brak yielded buildings which seem to have been used for food production on a supra-domestic scale; moreover, some buildings were involved in craft production as evidenced by the presence of various tools inside these structures. Religion was developing as well, as suggested by the presence of temples discovered at Tell Brak and Tepe Gawra. In the Ninevite 5 period, the architecture was much more modest than the one from the previous, Ubaid and LC, periods. One of the characteristic features of the Ninevite 5 architecture was the existence of large complexes of *siloi* and granaries, which might indicate that wealth and power were perhaps based on agricultural surpluses.

The Ninevite 5 period marks a decrease in contacts with southern Mesopotamia and the regions located to the east, reflected in the decrease in the presence of foreign materials such as precious stones and obsidian. Large centers lost their importance, and temples which were previously large and engaged in the exchange and craft manufacture became small.

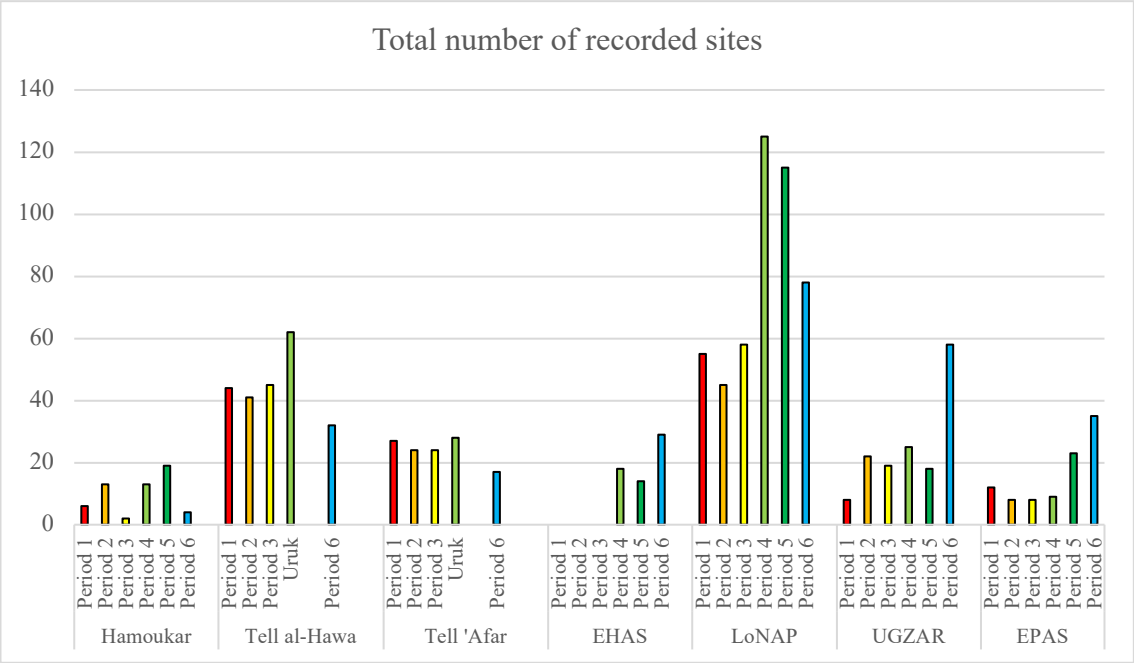

Chart 1. Total number of sites per period in each region

The communities living in northern Iraq based their subsistence mainly on agriculture and husbandry. Thus, people preferred to settle in places which were the most suitable for the agricultural economy, featuring deep, fertile soils, sufficient rainfall, and sources of drinking water available on a perennial scale. This explains why the plains of Navkur, Erbil, Tell ‘Afar, and Tell al-Hawa were so densely settled through all the discussed periods. Hunting wild animals played a secondary role in the subsistence lifestyle; in most cases, people hunted local species. However, in a few cases (e.g., Umm Dabaghiyah), the settlements seem to have been located on purpose in areas where certain species occurred.

The mountainous regions do not yield much traces of settlements, especially from the earlier of the discussed periods, but it does not mean that they were not exploited. The highlands might have been used for pasture. The mountains were also a source of raw material like limestone and chert. Some chert mines were recorded in the Zawa mountains

south of Duhok by the LoNAP project (Conati Barbaro et al. 2017; Iamoni 2017). Small chert nodules were observed by the members of the UGZAR project on the southern slopes of the Harir mountains as well. Not far from one of the Harir mountain valleys (ca. 3 km), UGZAR has recorded at site US174 numerous cores made of chert and plenty of flakes, which suggests that the site was used for stone knapping. The date of this activity is difficult to establish; the earliest potsherds from this site come from the Ninevite 5 period, but it cannot be excluded that the exploitation of chert resources dates to an earlier period.

Exchange of raw materials, especially obsidian, may have played an important role in the localization of settlements. Communication routes not only connected northern Mesopotamia with distant regions like Anatolia, Iran, and Afghanistan but also operated on a more local scale. Some raw materials, such as limestone, basalt, sandstone, and chert, could be found within northern Mesopotamia. Local raw materials, such as basalt, sandstone, limestone, and also conglomerate and marl, were used for the production of mortars, pestles, and querns.

Relations with distant regions are observable already in the Hassuna period. A review of raw materials found at Hassuna sites confirms the existence of exchange relations with both other regions of Iraq as well as more distant locations like Anatolia, the Mediterranean coast, and the Arabian Peninsula. In the Halaf period, the exchange of obsidian and other raw materials continued, including possibly also the beautifully decorated Halaf pottery. A house of a potter and stoneworker was discovered at Arpachiyah, and it is probable that the goods were produced for exchange. During the Ubaid period, relations with southern Mesopotamia became more visible, both in the material culture and architecture. According to Pollock (2001: 197), obsidian blades were used in southern Mesopotamia mainly in the LC2–4 period.

The exchange routes seem to have been related to the location of large centers, such as Tell Brak, Tell Hamoukar, Tell al-Hawa, which served as communication nodes on the roads connecting Anatolia and southern Mesopotamia. These tracks are known from later times and are still used today. The exchange system might have also played a role in the location of sites which yielded southern Uruk material. Sites with southern Uruk pottery were quite numerous in the area of Tell al-Hawa and on the Erbil plain; some of them occurred also in the eastern part of the UGZAR area, and there were also quite many sites with southern Uruk in the Rania plain. However, very few southern sherds have been found in the LoNAP and EHAS regions, with the exception of the areas adjacent to the

Tigris river. The UGZAR area might have been crossed by some communication routes leading towards Rawanduz, and perhaps that is the reason for the higher number of sites with southern Uruk pottery than in the LoNAP area. There might have also been even earlier tracks connecting the Erbil plain and the region of Rawanduz, as might be attested by the presence of sites Girdi Rubiya with Samarra pottery and Banahilk with Halaf pottery, both in the region of Rawanduz. Samarra potsherds were found also at Tell Shamshara. In the UGZAR area, site US218 located in the Qadiana valley has yielded Samarra pottery as well.

The appearance of local centers and their engagement in the exchange of rare goods, as well as the accumulation of power and wealth by some people, might have caused some tension between local communities, and even some conflicts, as may be evidenced by the mass graves discovered at the Majnuna part of the Tell Brak mega-site and by the traces of destruction found at Tell Hamoukar. The social tensions are also reflected in the appearance of structures with defensive features, found at Tepe Gawra, Grai Resh, Bab-w-Kur, and perhaps also at Qalinj Agha.

The areas of UGZAR, LoNAP, and EHAS might have played a more peripheral role in the system of exchange since all of these regions lack large local centers. In the UGZAR area, all the LC sites are quite small. Some exchange with other regions, direct or indirect, existed, however, which is attested by the presence of obsidian and southern Uruk artifacts, including pottery, clay cones, and a clay sickle found at site US150.

Generally speaking, the changes in the settlement patterns in northern Iraq which took place since the Hassuna till the end of Ninevite 5 period were not spectacular; people maintained their way of life, continued to cultivate the land through millennia, were engaged in craft production and exchange, and usually lived in smaller settlements.

When comparing the settlement patterns in various regions of northern Iraq, one must keep in mind that the methodology of all the surveys differed, which might have influenced their results. The most recent surveys (UGZAR, LoNAP, EPAS, EHAS) use the same pottery typology, which was based on a catalog created after the Tell al-Hawa and Tell Hamoukar surveys. The Tell ‘Afar survey used different dating criteria, for example, Ibrahim did not differentiate southern Uruk pottery. In the case of the pottery from the Halaf period, Ibrahim did not divide it into early and late Halaf, while Wilkinson and Tucker were a bit more specific only in the case of several sites. The more precise pottery descriptions from most recent surveys are not available yet since the work is still not finished. Such differences make comparisons between regions very difficult. The

survey pottery data are sometimes not precise enough, which leads to difficulties in observing the settlement changes, as in the case of the transition from Uruk to Ninevite 5. The lack of Terminal Uruk and Transitional pottery in the Tell al-Hawa region may be explained in two contradictory ways; one assuming the abandonment, and the other the continuation of the settlement. The Terminal Uruk and Transitional pottery was completely unknown when Ibrahim undertook his survey; thus, as in the case of the Tell al-Hawa survey, two hypothetical explanations mentioned above may apply.

The other problem is that making some general observations may be at present hindered by the fact that the EPAS, LoNAP, and EHAS surveys are still in progress (like many other archaeological projects conducted in the Iraqi Kurdistan), and only partial results of the fieldwork are available at the moment.

Despite considerable progress, there are still many uncertainties concerning the prehistoric settlement patterns in northern Mesopotamia. The issues which require more attention are the transition from Hassuna to Halaf, from Halaf to Ubaid, and from LC3–5 to Ninevite 5, at least in the UGZAR area. The lack of transitional pottery raises doubts as to whether a given area was abandoned or not. Perhaps some of these problems will be solved by excavations which are being undertaken more and more often in the Iraqi Kurdistan, with the aim to provide more accurate pottery sequences and more precise information on the settlement structures. The study of the prehistoric settlement patterns in northern Iraq is still in its initial stage.

Abbreviations

BAR British Archaeological Reports

ARCANE Associated Regional Chronologies for the Ancient Near East and the Eastern Mediterranean

ASK Archaeological Survey of Koya

CAA Computer Applications and Quantitative Methods in Archaeology

CNRS Centre National de la Recherche Scientifique

EHAS Eastern Habur Archaeological Survey

EPAS Erbil Plain Archaeological Survey

ETG Early Tigridian

ICAANE International Congresses on the Archaeology of the Ancient Near East

LC Late Chalcolithic

LoNAP Land of Nineveh Archaeological Project

MAIKI La Missione Archeologica Italiana nel Kurdistan Iracheno

NINO Nederlands Instituut voor het Nabije Oosten

NIT Nederlands Instituut in Turkije

OIP Oriental Institute Publications

PAM Polish Archaeology in the Mediterranean

PIHANS Publications de l'Institut historique-archéologique ńeerlandais de Stamboul

PPN Pre-Pottery Neolithic

SAOC Studies in Ancient Oriental Civilization

UGZAR Upper Greater Zab Archaeological Reconnaissance

WVDOG Wissenschaftliche Veröffentlichungen der Deutschen Orientgesellschaft

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Streszczenie

Praca doktorska podzielona jest na cztery części. Na początku pierwszej części omówiony jest cel pracy, jej zakres chronologiczny i geograficzny. Dalsza część odnosi się do celów i przebiegu realizacji projektu „Settlement History of Iraqi Kurdistan", który dostarczył oryginalnych danych analizowanych w dalszych rozdziałach rozprawy. Krótko scharakteryzowane zostały również pozostałe projekty badań powierzchniowych, których wyniki są omawiane w pracy. Drugi rozdział pracy omawia początki studiów osadniczych w archeologii oraz założenia teoretyczne jakie stały u ich podstawy. W dalszej kolejności przedstawione zostały problemy i trudności związane z interpretacją danych pochodzących z badań powierzchniowych. Ostatnia część tego rozdziału odnosi się do sposobu interpretacji materiału archeologicznego stosowanego w niniejszej pracy. Rozdział trzeci to omówienie osadnictwa w poszczególnych okresach: Hassuna, Halaf, Ubaid, LC 1-2, LC 3-5 oraz Niniwa 5. Dla każdego okresu zostały wydzielone podrozdziały poruszające kolejno kwestie struktur osadniczych, pozyskiwania surowców naturalnych, produkcji pożywienia, obrzędów pogrzebowych oraz dystrybucji stanowisk w poszczególnych rejonach objętych badaniami powierzchniowymi. W ostatniej części pracy przedstawione zostały konkluzje.

Celem pracy doktorskiej było zbadanie w jaki sposób działalność człowieka widoczna w ekonomii, relacjach społecznych i ideologii kształtuje osadnictwo. Badany obszar obejmuje tereny północnego Iraku (jak również północno-wschodnie krańce Syrii w rejonie Trójkąta Chaburskego) od okresu Hassuna aż do końca okresu Niniva 5. Studia osadnicze często odnoszą się do środowiska naturalnego jako czynnika determinujące osadnictwo. Inne spojrzenie mają Żak (1977) i Rączkowski (1997), dla których czynnikiem kształtującym osadnictwo jest działalność człowieka przejawiająca się w ekonomii, relacjach społecznych i ideologii czy też filozofii życia. Środowisko jest pasywne, zależne od tego w jaki sposób zostanie zinterpretowane przez człowieka. Środowisko geograficzne jest też dość stałe: warunki glebowe nie zmieniają się szybko, rzeki mają podobny przebieg, góry wydają się być nieruchome. To co podlega przemianom, to działalność człowieka; zmiany te wpływają z kolei na osadnictwo.

Praca ta odwołuje się również do problemu zmian i ciągłości w osadnictwie. Wykorzystane dane pochodzą z wykopalisk jakie miały miejsce na stanowiskach archeologicznych w północnym Iraku (oraz północno-wschodnim krańcu Syrii), a także badań powierzchniowych, zarówno tych przeszłych i współczesnych. Badania

powierzchniowe dostarczają danych na temat lokalizacji i chronologii licznych stanowisk. Wykopaliska natomiast są źródłem informacji na temat ekonomii (sposoby pozyskiwania jedzenia, wytwórstwo, handel wymienny), relacji społecznych (cmentarzyska oraz zróżnicowana zabudowa osad), oraz architektury (domy, warsztaty, świątynie). W przypadku danych z badań powierzchniowych pojawia się problem współczesności osad. Stanowiska pochodzące z tego samego okresu są często traktowane jako sobie współczesne, zasiedlone w tym samym czasie, przez co osadnictwo wydaje się być dość zastygłe. Aby spojrzeć na nie z nieco bardziej dynamicznej perspektywy zostały wykorzystane założenia modelu Dewara (1991) oraz oparte na nich równania Kintigha (1994), które pozwalają oszacować średnią liczbę współczesnych sobie stanowisk. Obliczenia te były przydatne w niektórych przypadkach, należy jednak pamiętać, że są zależne od dokładności datowania, stad też nie zawsze dostarczają sensownych wyników. Niemniej jednak pozwalają spojrzeć na osadnictwo w nieco bardziej dynamiczny sposób.

Różny sposób prowadzenia badań powierzchniowych, a w szczególności datowanie stanowisk w oparciu o różne typologie ceramiki, jest utrudnieniem w porównywaniu poszczególnych obszarów między sobą. Problemy te dotyczą głównie porównania rezultatów starszych i współczesnych badań powierzchniowych. Cztery (Erbil Plain Archaeological Survey, Land of Nineveh Archaeological Project, Eastern Habur Archaeological Survey, Upper Greater Zab Archaeological Reconnaissance) z pośród wszystkich projektów badawczych prowadzonych obecnie na terenie Kurdystanu współpracują w ramach Assyrian Landscapes Research Group. Charakteryzują się one stosowaniem podobnej metodyki badawczej oraz wspólną typologią ceramiki wykorzystywaną do datowania stanowisk. Typologia ta opiera się głównie na wcześniejszych badaniach prowadzonych w okolicy Tell al-Hawa oraz Tell Hamoukar. Regiony te są nieco oddalone od obszarów niektórych surveyów w Kurdystanie np. od terenu UGZAR. Brak dokładnej typologii ceramiki dla obecnie badanych obszarów, uwzględniającej lokalne warianty i typy, sprawia, że pewne problemy są trudne do zinterpretowania. Tereny Kurdystanu Irackiego były dość peryferyjne i możliwe, że niektóre typy ceramiczne charakterystyczne dla danego okresu nie występowały tutaj lub ich użycie było na przykład znacznie dłuższe. Takimi problematycznymi momentami są przejścia Hassuna – Halaf, Halaf – Ubaid oraz LC3-5 – Niniva 5. Brak ceramiki danego typu może oznaczać opuszczenie danego obszaru, zmianę trybu życia z osiadłego na pasterski lub po prostu niewystępowanie danego typu na tym terenie.

Charakterystyczne dla osadnictwa północnego Iraku jest zróżnicowanie regionalne. Poszczególne regiony wykazywały różną dynamikę osadnictwa w tych samych okresach, nawet jeśli regiony te były od siebie oddalone o zaledwie kilka kilometrów, jak na przykład regiony Tell al-Hawa i Tell Hamoukar. Wspólną cechą dla większości obszarów w ciągu wszystkich okresów jest tendencja do okupowania wcześniej zasiedlonych miejsc, co może wskazywać na przywiązanie do danego miejsca, na lokalną tożsamość.

Zmiany jakie dokonywały się w osadnictwie nie są spektakularne, społeczności północnego Iraku kontynuowały rolnictwo i okupowały te same dość żyzne tereny. Zmianie ulegała natomiast wielkości osad, jak i ich zabudowa, co ma związek ekonomią i relacjami społecznymi. W okresie Hassuna część osad dostarczyła śladów bardzo nietrwałych form architektonicznych jak proste szałasy. Tego typu schronienia mogły być używane przez pasterzy lub myśliwych. W okresie Halaf pojawiają się budynki na planie okręgu, których funkcja nadal nie jest jasna. W okresie Ubaid pojawiają się świątynie oraz duże domy mogące pomieścić większą rodzinę. Świątynie mogły być związane nie tylko z kultem, mogły pełnić również funkcje administracyjne i gospodarcze, jak produkcja i wymiana dóbr. Elity i duże stanowiska powstają w okresie LC2. Wówczas rozwija się również zróżnicowanie gospodarcze. Nie wszystkie regiony rozwijają się jednak w ten sam sposób, nie wszędzie pojawiają się centra administracyjno-gospodarcze, np. na terenie badanym przez UGZAR takie centra nie występują a zarejestrowane stanowiska są bardzo małe. W okresie LC 3-5 świątynie kontynuują swoją działalność, rozwija się również produkcja rzemieślnicza. W tym czasie ma miejsce również tzw. ekspansja urucka. Jej charakter nie był jednakowy dla wszystkich obszarów północnego Iraku. W części obszarów ceramika określana jako południowy Uruk niemal nie występuje. Koniec okresu LC3-5 wiąże się ze zmianami. Na wielu obszarach brak ceramiki z okresu Terminal Uruk/Transitional, co może świadczyć o opuszczeniu tych terenów. Taka sytuacja ma miejsce na terenie, który badał projekt UGZAR. W okresie Niniva 5 architektura mieszkalna jest znacznie skromniejsza, również świątynie są małe i zbudowane na prostym planie. Pojawiają się natomiast spore silosy i spichlerze, które mogą sugerować związek między nadwyżkami żywności a władzą i bogactwem. Importowane surowce nie są tak liczne jak wcześniej, co świadczy o mniej intensywnych kontaktach z południową Mezopotamią i ternami położonymi na wschód.

W ciągu wszystkich omawianych okresów większość osad lokowana była na żyznych terenach, odpowiednich dla społeczności, których gospodarka opiera się głównie na rolnictwie. Tereny górzyste mogły być wykorzystywane jako pastwiska lub źródło surowców kamiennych, takich jak na przykład krzemień czy wapienie. W lokalizacji stanowisk istotne są jednak również szlaki komunikacyjne. Powstanie dużych centrów administracyjno-gospodarczych jest związane z przebiegiem szlaków wymiany handlowej. Tell al-Hawa, Tell Hamoukar i Tell Brak powstały na szlaku prowadzącym do Anatolii. Pozyskiwanie obsydianu z Anatolii miało miejsce już w okresie Hassuna. Obsydian występuje na wielu stanowiskach w północnej Mezopotamii aż do okresu Niniva 5, natomiast na południu obsydian wykorzystywany był głównie w okresie LC 2-4. Z przebiegiem szlaków handlowych związane wydaje się być też występowanie ceramiki południowego Uruku, która jest dość liczna np. w rejonie Tell al-Hawa a w zachodniej części projektu UGZAR oraz na terenie projektu LoNAP jest jej bardzo niewiele.

Obecne badania prowadzone w Kurdystanie stanowią duży progres w poznaniu osadnictwa tego regionu. Wciąż jednak istnieje wiele niejasności, w szczególności dotyczących przejścia od okresu Hassuna do Halaf, od Halaf do Ubaid oraz od LC3-5 do Niniwa 5. Problemy te wymagają większej uwagi, choć nie wydaje się, by można było udzielić odpowiedzi na część postawionych w tej pracy pytań bez badań wykopaliskowych.

Abstract

The dissertation is divided into four parts. The aim of the dissertation, its chronological span, and geographical scope are described at the very beginning of the first chapter. The chapter refers also to the aims and realization of the project *Settlement History of Iraqi Kurdistan* (also called UGZAR), which yielded original data analyzed in the following chapters. Other projects, the results of which are discussed in the dissertation, were described shortly as well. The second chapter of the dissertation refers to the archeological settlement patterns studies, their development and theoretical foundations. Problems and difficulties related with the interpretation of archaeological survey data were also discussed. At the end of this chapter, the way in which the archaeological data are interpreted in the dissertation is described. The third chapter analyzes settlement in each period: Hassuna, Halaf, Ubaid, LC 1-2, LC 3-5, Ninevite 5. Each period has its own subchapter, which refers to settlement structures, procurement of raw materials, food sources, burial customs, and distribution of settlements in the individual regions covered by the surveys. The last part of the dissertation are the conclusions.

The aim of the dissertation was to investigate how human agency, visible in the economy, social relations, and ideology, shapes the settlement patterns. The investigated area covers the lands of northern Iraq (and also north-eastern edges of Syria in the region of Khabur Triangle) from Hassuna until the end of Ninevite 5 period. Settlement studies were often referring to the natural environment as the main force shaping the settlement patterns. Żak (1977) and Rączkowski (1997) have a different view, for them it is the human agency, visible in economy, social relations, and ideology or philosophy of life, that is shaping the settlement patterns. The natural environment is passive, depending on how it is interpreted by man. It is quite stable; soils do not change fast, rivers have a relatively similar course, mountains seem to be immovable. It is the human activity that is changing, and these changes influence the settlement patterns.

The dissertation refers also to the problem of changes and continuity in the settlement patterns. The data used in the dissertation come from the excavations undertaken in the northern Iraq (and in the north-eastern edges of Syria), as well as from surveys (past and present). The surveys provide data on the location and chronology of numerous archaeological sites. Excavations are a source of information on economy

(food sources, craft, trade/exchange), social relations (cemeteries and buildings of various purposes), architecture (houses, workshops, temples).

In the case of survey data, the contemporaneity problem arises. Archaeological sites dated to the same period are often treated as contemporary to each other, settled simultaneously, what leads to perceiving the settlement as something stable. Assumptions of Dewar's model (1991) and based on them Kintigh's equations (1994), allowing to estimate an average number of contemporary sites, were applied to look at the settlement from a more dynamic perspective. Kintigh's equations were useful in some cases, but it must be remembered that the results depend on the accuracy of dating; hence, the equations do not always provide us with reasonable results. Nevertheless, they allow for looking at the settlement from a more dynamic perspective.

Various survey methodologies, and especially dating of sites based on different pottery typologies, cause problems in comparing individual areas with each other. These problems mainly relate to the comparison between the results of older surveys and modern ones. Four (Erbil Plain Archaeological Survey, Land of Nineveh Archaeological Project, Eastern Habur Archaeological Survey, Upper Greater Zab Archaeological Reconnaissance) of all contemporary surveys undertaken in Iraqi Kurdistan cooperate within the frameworks of the Assyrian Landscapes Research Group. They all have a similar methodology and are dating the sites based on the same pottery typology. This pottery typology is based mainly on the results of earlier investigations in the regions of Tell al-Hawa and Tell Hamoukar. These regions are slightly distant from some of the areas surveyed in Iraqi Kurdistan, for example from the UGZAR area. The lack of an accurate typology for currently researched regions in Iraqi Kurdistan and taking into account the local variants and types causes difficulties in interpretation of some problems. The Iraqi Kurdistan areas were quite peripheral, and it is possible that some ceramic types characteristic of a certain period did not occur in these areas or they were used, for example, for much longer. The issues which are problematic are the transition from Hassuna to Halaf, from Halaf to Ubaid and from LC 3-5 to Ninevite 5. The lack of pottery of certain types might be interpreted as an abandonment of the area, a change in the lifestyle from settled to mobile, or simply as the lack of this kind of pottery in the area.

Settlement patterns in the northern Iraq are characterized by a regional differentiation. The regions differ in settlement dynamics in the same periods, even if they were only few kilometers apart, like the areas of Tell al-Hawa and Tell Hamoukar. The common feature of most of the regions throughout all of the investigated periods is

the tendency to occupy previously settled places, that might indicate some local identity with these places.

The changes which occurred in the settlement patterns were not spectacular, communities of the northern Iraq continued their agricultural lifestyle and occupied the same, quite fertile areas. But the settlements' size and the settlement structures (houses and other buildings) underwent some changes related with economic and social relations. Some of the settlements from the Hassuna period yielded evidence of perishable forms of architecture, such as simple huts. This kind of shelter might have been used by shepherds or hunters. In the Halaf period, circular buildings appeared, their function is still under discussion. In the Ubaid period, temples and large houses able to accommodate an extended family appeared. Temples might have been used not only for cultic purposes, they could have also had administrative and economic functions like production and exchange of goods. Elites and large settlements appeared in the LC2 period. At that time, also the economic differentiation developed. However, not all regions followed the same trajectory, administrative and economic centers did not appear in all regions, for example in the UGZAR area there were none of them and all sites were very small. In the LC 3-5, the temples continued their activity, and craft production was also developing. At that time, also the so called Uruk expansion occurred. The character of Uruk expansion was not common to all areas of the northern Iraq. In some of the regions the southern Uruk pottery is almost absent. The end of the LC 3-5 period is related with some changes. Some areas lack Terminal Uruk/Transitional pottery, what might indicate abandonment of these areas. Such a situation occurs in the area of UGZAR project. In the Ninevite 5 period, the residential architecture was significantly more modest, temples were small as well, built on a simple plan. However, there were large silo and granaries, what might suggest that the food surpluses were related to power and wealth. Imported raw materials were not as frequent as before, indicating that the contacts with the southern Mesopotamia and regions to the east became weaker.

During all the discussed periods, most of the settlements were placed on quite fertile lands, proper for communities whose economy was based mainly on agriculture. The mountainous areas could have been used as a pastureland or a source of raw materials such as chert and limestone. But in the case of location of settlements, communication tracks seem to be important as well. The emergence of large administrative and economic centers was related to the course of trade routes. Tell al-Hawa, Tell Hamoukar and Tell Brak are placed on tracks leading to Anatolia. The obsidian from Anatolia was used

already in the Hassuna period. Obsidian tools and flakes were encountered at many archaeological sites in northern Iraq up to the end of Ninevite 5, but in the southern Mesopotamia it was used mainly in the LC 2-4 period. The occurrence of southern Uruk pottery seems to be related to the course of trade routes as well. The southern Uruk pottery is quite numerous in the region of Tell al-Hawa, but in the western part of UGZAR area and in the LoNAP area, this type of pottery is scarce.

Current research conducted in the Iraqi Kurdistan is a great progress in understanding the settlement of this region. However, there are still many uncertainties, in particular, regarding the transition from Hassuna to Halaf, from Halaf to Ubaid, and from LC 3-5 to Ninevite 5. These problems require more attention, although it does not seem possible to answer some of the questions raised in this work without the excavations.

List of figures

List of charts

List of tables